DAIKIN

EDUS 391000 - N_a

R-410A

Engineering Data

VRV III®

Installation

DAIKIN AC (AMERICAS), INC.

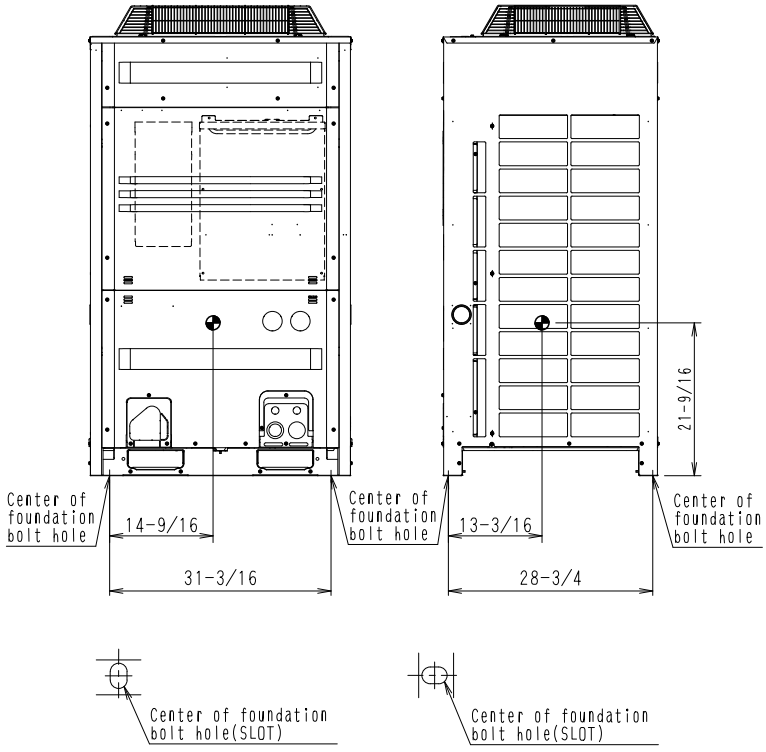
Installation of Outdoor Units

1. Center of Gravity 3
   1.1 460V 3
   1.2 208-230V 5
2. Foundation Drawing 7
3. REFNET Pipe System 8
   3.1 Layout Example 8
   3.2 Field Refrigerant Piping 10
   3.3 REFNET Joints and Headers 11
4. REFNET Pipe System 13
   4.1 REFNET Joint (Branch Kit) 13
   4.2 REFNET Header (Branch Kit) 17
   4.3 Outdoor Unit Multi Connection Piping Kit 21
5. Installation 32
   5.1 RXYQ72~196PAYD / RXYQ216~240PYDNR (Heat Pump, 460V)
   RXYQ72 ~196PATJ / RXYQ216~240PTJUR (Heat Pump, 208-230V) 32
   5.2 REYQ72~120PAYD (Heat Recovery, 460V)
   REYQ72~120PATJ (Heat Recovery, 208-230V) 55
   5.3 REYQ144~192 PAYD / REYQ216~240PYDNR (Heat Recovery, 460V)
   REYQ144~192 PATJ / REYQ216~240PTJUR (Heat Recovery, 208-230V) ... 75
6. External Static Pressure Setting 97
   6.1 460V 97
   6.2 208-230V 102

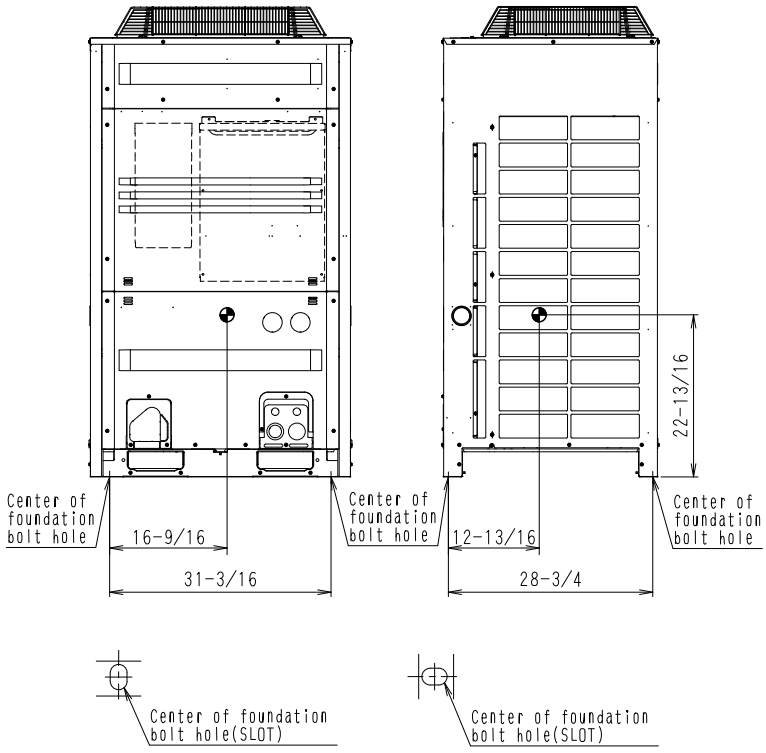
1. Center of Gravity

1.1 460V

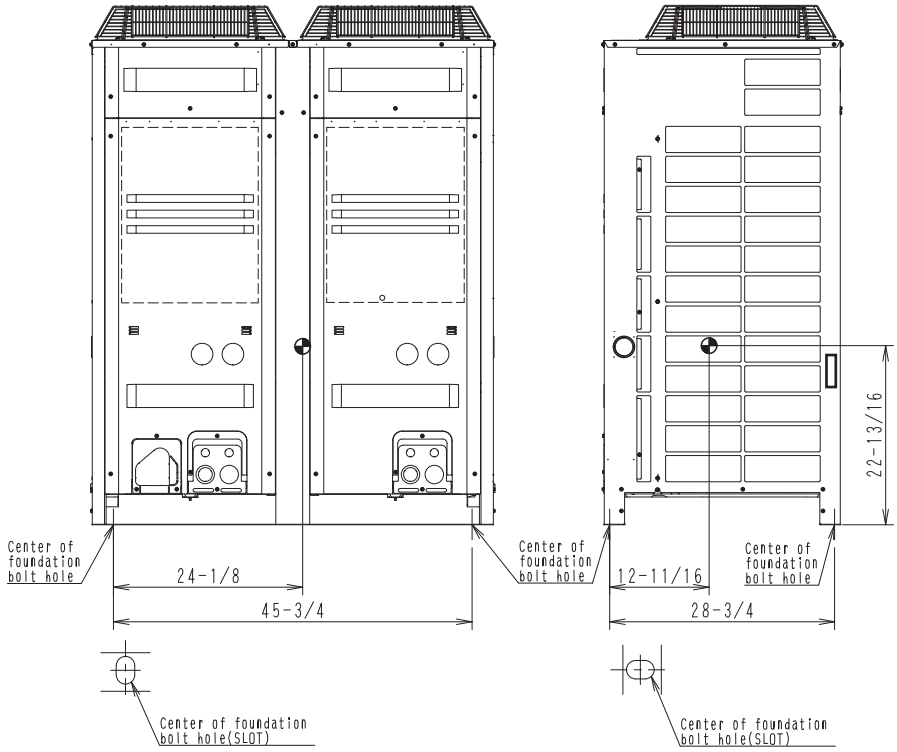
REMQ72PAYD



RXYQ72, 96, 108PAYD
REMQ96PAYD, REMQ120PYDNR

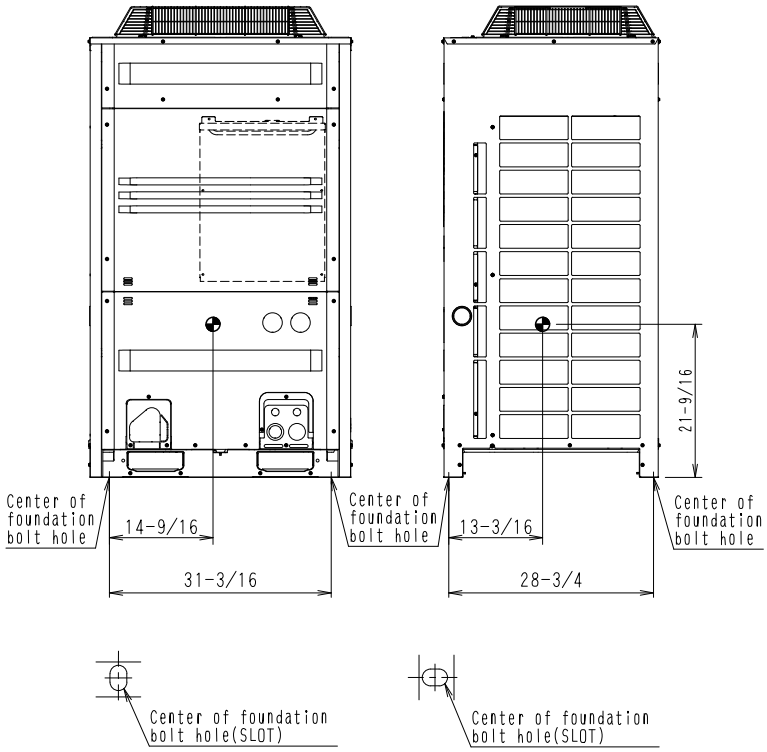


REYQ72, 96, 120PAYD



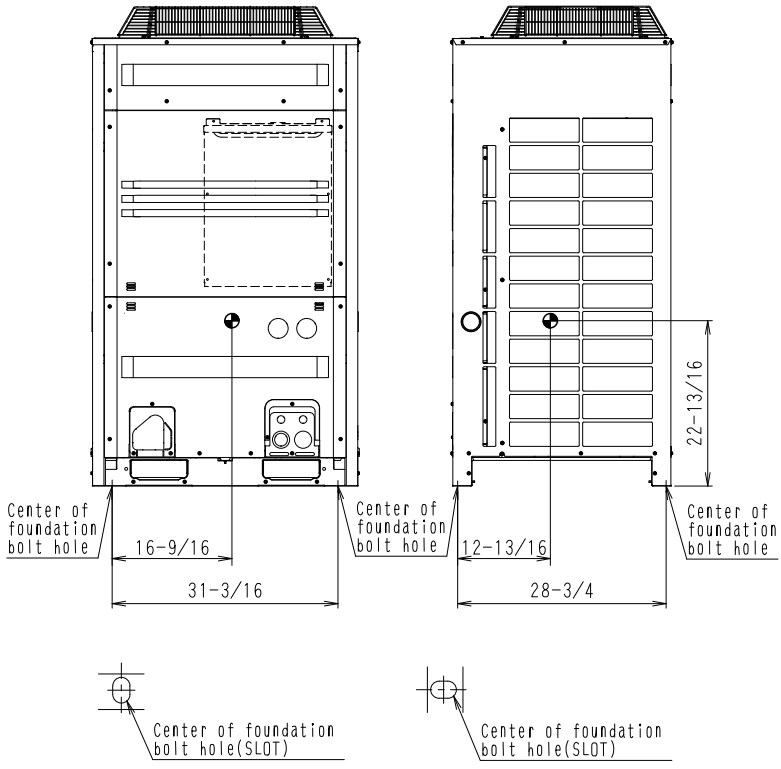
1.2 208-230V

REMQ72PATJ



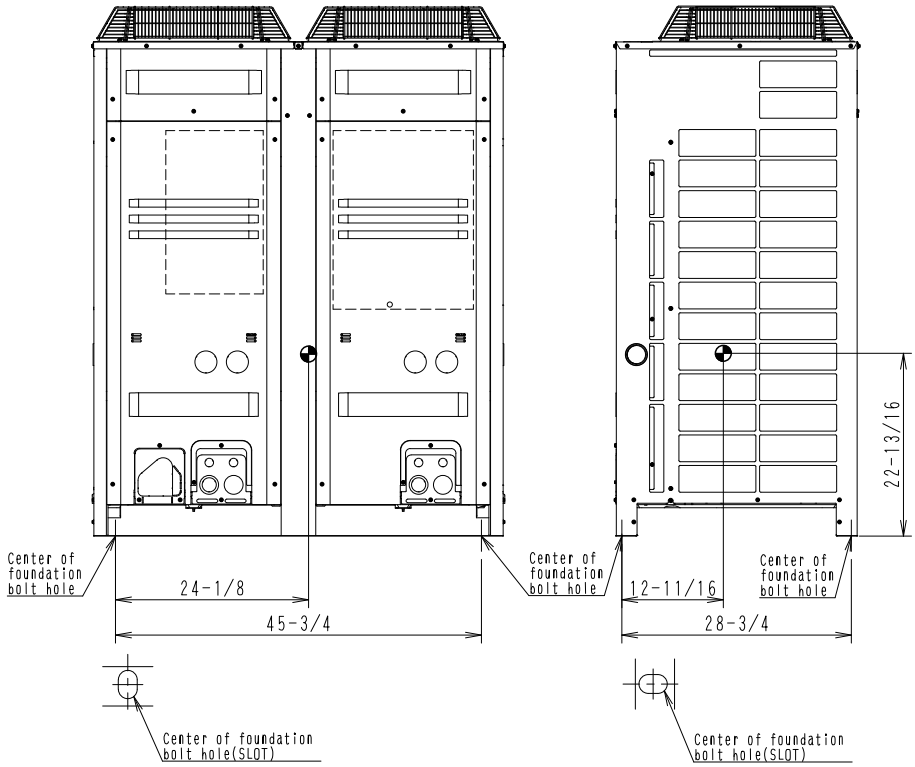
4D060193A

RXYQ72, 96, 108PATJ
REMQ96PATJ, REMQ120PTJUR



4D060194A

REYQ72, 96, 120PATJ



4D060195A

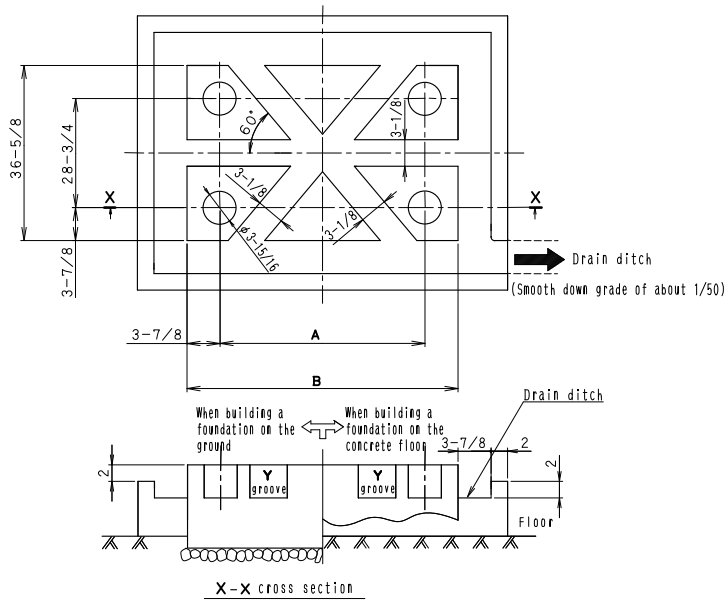
2. Foundation Drawing

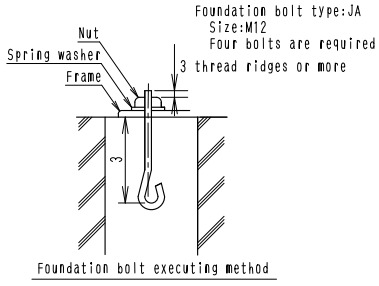
■ **460V**

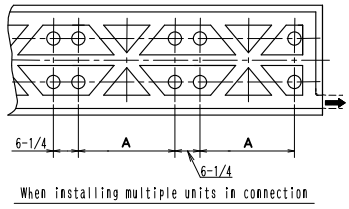
RXYQ72, 96, 108PAYD / RXYQ120PYDNR
REYQ72, 96, 120PAYD
REMQ72, 96PAYD / REMQ120PYDNR

■ **208-230V**

RXYQ72, 96, 108PATJ / RXYQ120PTJUR
REYQ72, 96, 120PATJ
REMQ72, 96PATJ / REMQ120PTJUR







Model	A	B
RXYQ72, 96, 108PAYD RXYQ72, 96, 108PATJ REMQ72, 96PAYD REMQ72, 96PATJ	31-3/16	39-1/16
REYQ72, 96, 120PAYD REYQ72, 96, 120PATJ	45-3/4	53-5/8

(Notes)

1. The proportions of cement:sand:gravel for the concrete shall be 1:2:4, and the reinforcement bars that their diameter are 3/8in, (approx. 11-3/4in intervals)shall be placed.
2. The surface shall be finished with mortar. The corner edges shall be chamfered.
3. When the foundation is built on a concrete floor, rubble is not necessary. However, the surface of the section on which the foundation is built shall have rough finish.
4. A drain ditch shall be made around the foundation to thoroughly drain water from the equipment installation area.
5. When installing the equipment on a roof, the floor strength shall be checked, and water-proofing measures shall be taken.

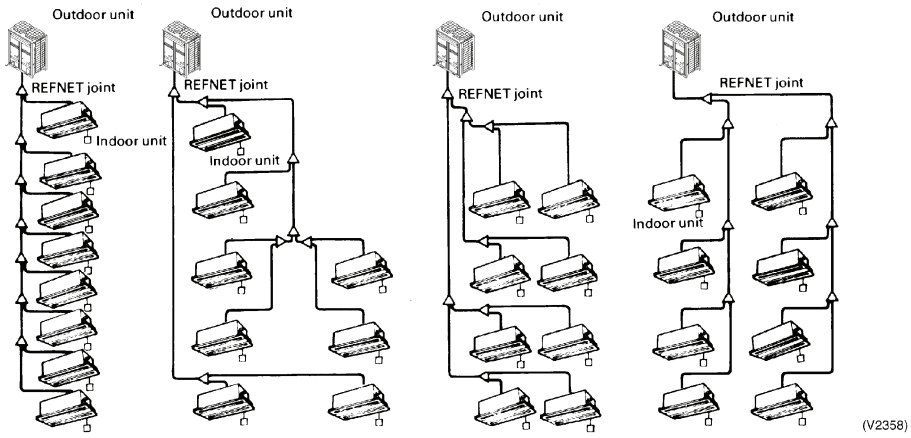
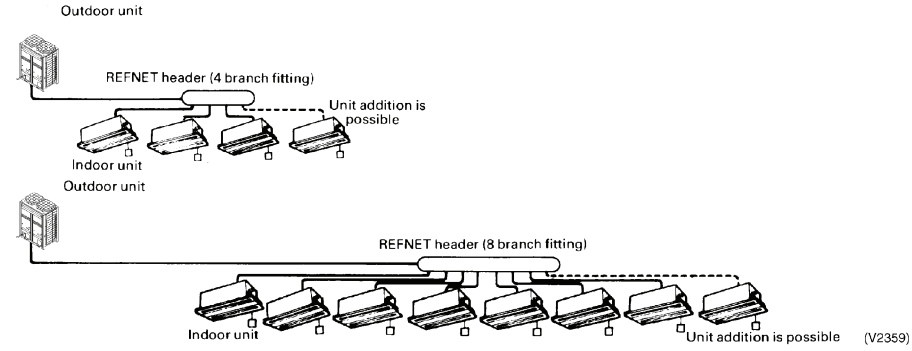
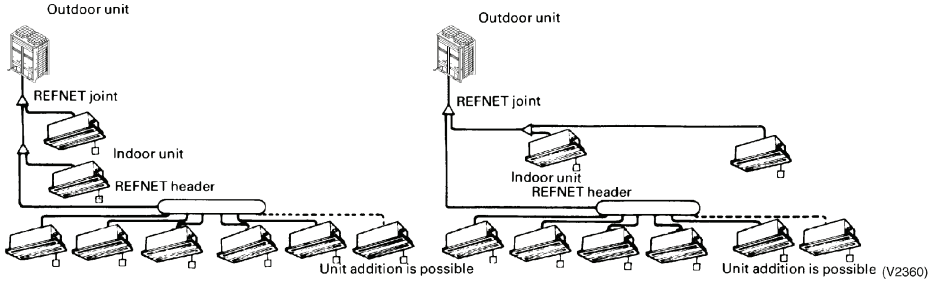
3D058655A

3. REFNET Pipe System

3.1 Layout Example

3.1.1 Heat Pump System

Use of the particular branch fitting appropriate to each individual unit type not only permits the pipes to be laid with ease but also increases the reliability of the system as a whole.

Type of fitting	Sample systems
Line branch fitting (Pipes containing REFNET joints only)	
Header branch fitting (Piping consists of REFNET headers only)	 Outdoor unit REFNET header (4 branch fitting) Unit addition is possible Indoor unit REFNET header (8 branch fitting) (V2359)
Mixed branch fittings (Piping including both headers and joints)	

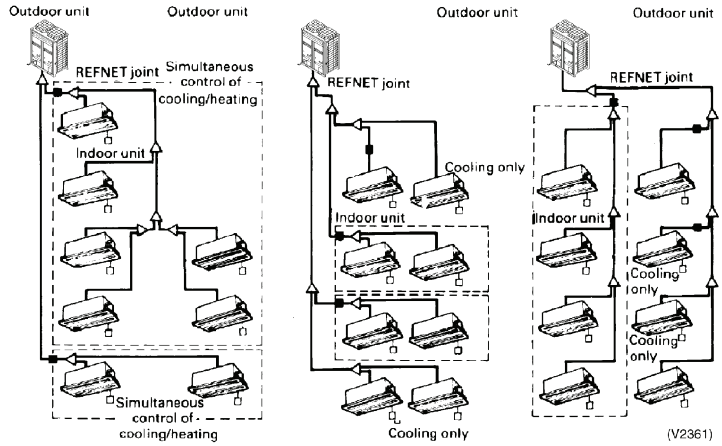
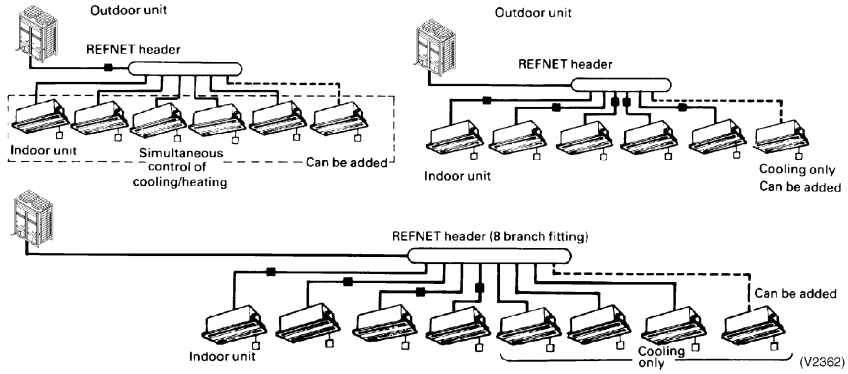
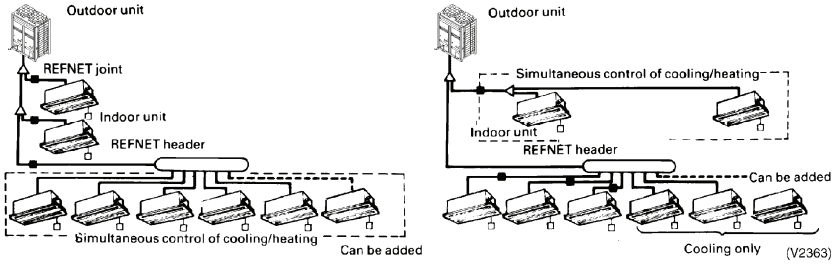
Units can be added by connecting them directly to the REFNET header or REFNET joint. Further branches cannot be included in the system below the REFNET header branch.

NOTES:

1. When the capacity ratio of the indoor system to the outdoor unit is more than 100% and when all the indoor units are in operation at the same time, the rated capacity of each unit will be somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning choosing components, see ***VRVIII REFNET and Piping Selection Rules.***
3. The Daikin REFNET kits are supplied with insulation intended to fit over the main body of the REFNET joint after installation of the REFNET kit is complete.
4. **IMPORTANT:** In applications where the REFNET kits are installed in an environment requiring fire-rated materials to be used, it is necessary for the installer to obtain from a third party supplier and to utilize, for insulation, fire-rated materials that meet all applicable building codes and other requirements. The factory-provided insulation that is supplied with the REFNET kit should be discarded in a manner meeting all applicatble laws.

3.1.2 Heat Recovery System

Use of the particular branch fitting appropriate to each individual unit type not only permits the pipes to be laid with ease but also increases the reliability of the system as a whole.

Type of fitting	Sample systems
Distribution by REFNET joints	
Distribution by REFNET header	
Combination of REFNET joints and headers	

Units can be added by connecting them directly to the REFNET header or REFNET joint. Further branches cannot be included in the system below the REFNET header branch.

NOTES:

1. When the capacity ratio of the indoor system to the outdoor unit is more than 100% and when all the indoor units are in operation at the same time, the rated capacity of each unit will be somewhat reduced.
2. Special purpose REFNET pipe components must be used for all the pipe work. For further details concerning choosing components, see ***VRVIII REFNET and Piping Selection Rules.***
3. The Daikin REFNET kits are supplied with insulation intended to fit over the main body of the REFNET joint after installation of the REFNET kit is complete.
4. **IMPORTANT:** In applications where the REFNET kits are installed in an environment requiring fire-rated materials to be used, it is necessary for the installer to obtain from a third party supplier and to utilize, for insulation, fire-rated materials that meet all applicable building codes and other requirements. The factory-provided insulation that is supplied with the REFNET kit should be discarded in a manner meeting all applicatble laws.

3.2 Field Refrigerant Piping

3.2.1 Heat Pump Series

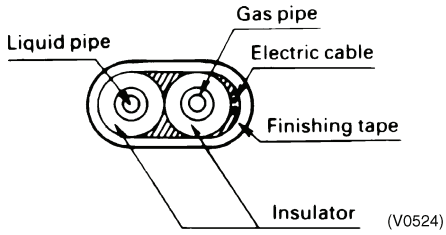
1. The following materials should be used for all refrigerant piping.

- Materials: Deoxidized phosphorous seamless copper pipe or equivalent

2. The tips for insulation

- Both Gas, Liquid piping must be insulated.
- Materials: Glass fiber or heat resistant polyethylene foam.
  Thickness: 1/2 inch or more

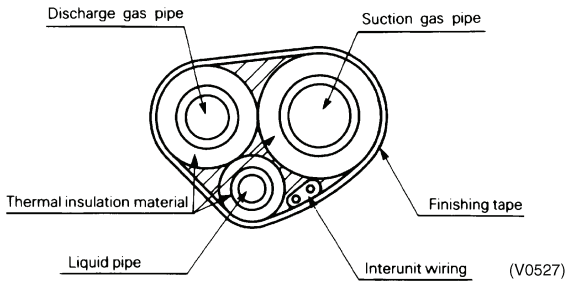
- Insulation of both liquid and gas pipe



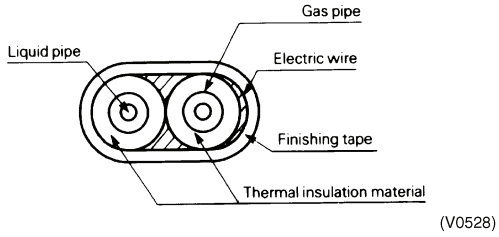
3.2.2 Heat Recovery Series

- Suction, Discharge Gas piping, liquid piping must be insulated.
- Example of thermal insulation work.

- 3 piping section (between outdoor unit and Branch Selector unit)



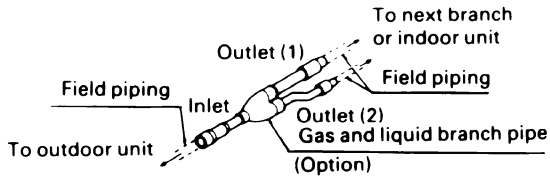
- 2 piping section (between Branch Selector unit and indoor unit)



3.3 REFNET Joints and Headers

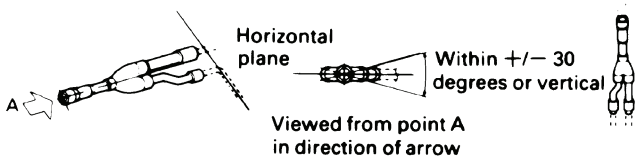
3.3.1 REFNET Joints

For gas and liquid branch pipes



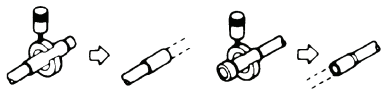
(V0302)

- Make sure that all branch pipes are fitted such that they branch either horizontally or vertically.

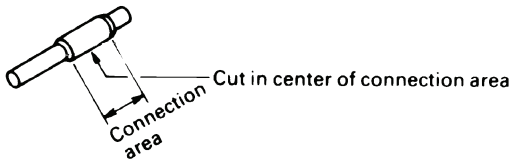


(V0305)

- When the size of the selected field piping is different from that of branch pipe then the connecting section should be cut with a pipe cutter as shown in the figure below.

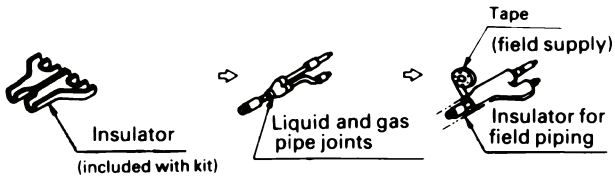

(V0303)

- When you are cutting an inlet or outlet pipe with a pipe cutter make sure that you make the cut in the center of the connection area.



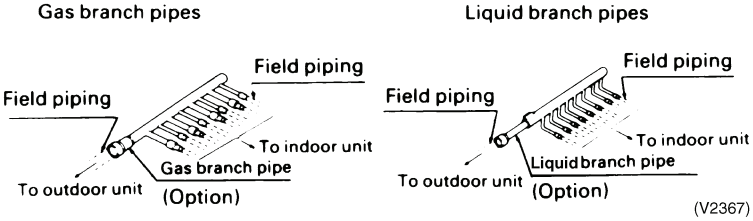
(V0304)

- Branch pipes must be insulated in accordance with the handbook which comes with each kit.



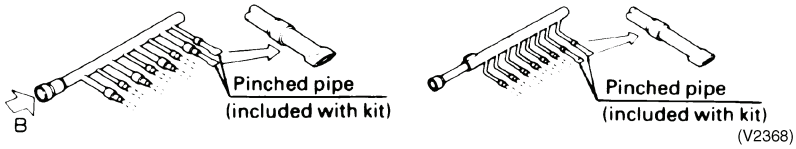
(V0306)

3.3.2 REFNET Header

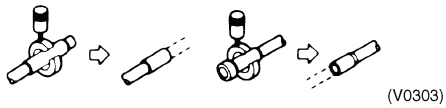


(V2367)

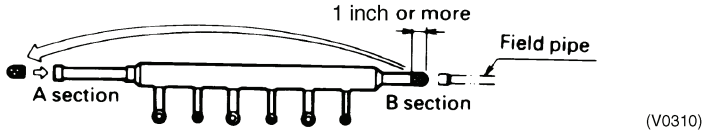
- When the number of indoor units to be connected to the branch pipes is less than the number of branch pipes available for connection then cap pipes should be fitted to the surplus branches.



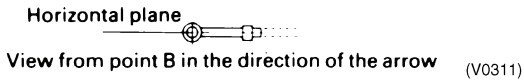
- When the size of the selected field piping is different from that of branch pipe then the connecting section should be cut with a pipe cutter as shown in the figure below.



- When field piping is connected to the B section of the inlet/outlet pipe on the outdoor unit side of the liquid pipe header.
- Cut the B section with a pipe cutter as shown below and connect it to the A section.
- Connect the flared section of the field pipe to the B section.

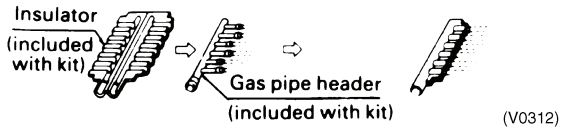


- Fit the branch pipe so that the branch lies in a horizontal plane.

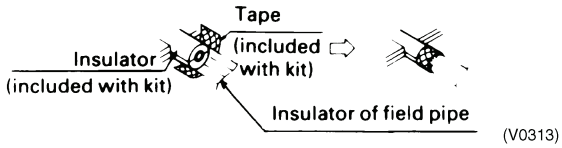


- The branch pipe must be insulated in accordance with the instruction manual which comes with each kit.

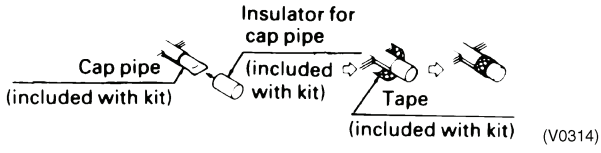
1. Use the insulator included in the kit to insulate the header.



2. Joints between insulators included in the kit and those already applied to the field piping should be sealed with the tape which is also included in each kit.



3. Any cap pipes should also be insulated using the insulator provided with each kit and then taped as described above.

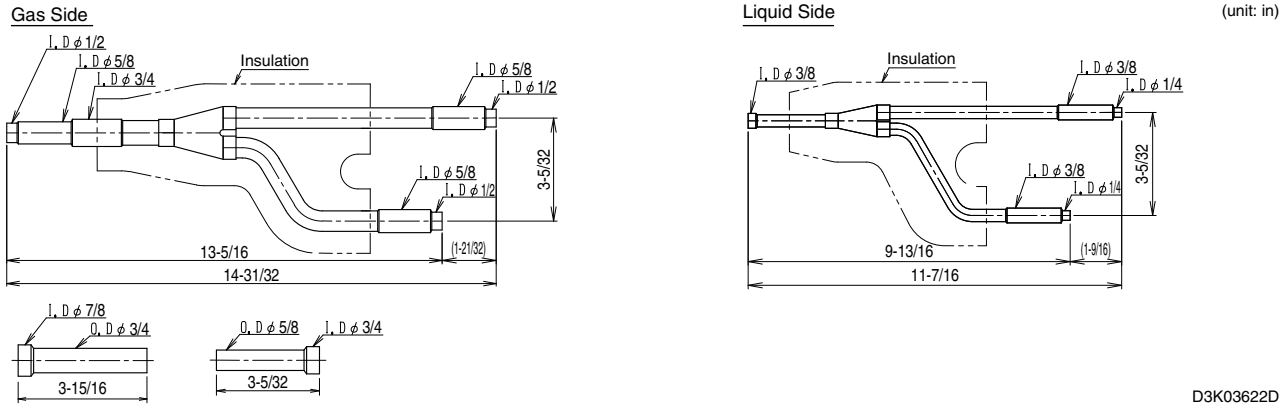


4. REFNET Pipe System

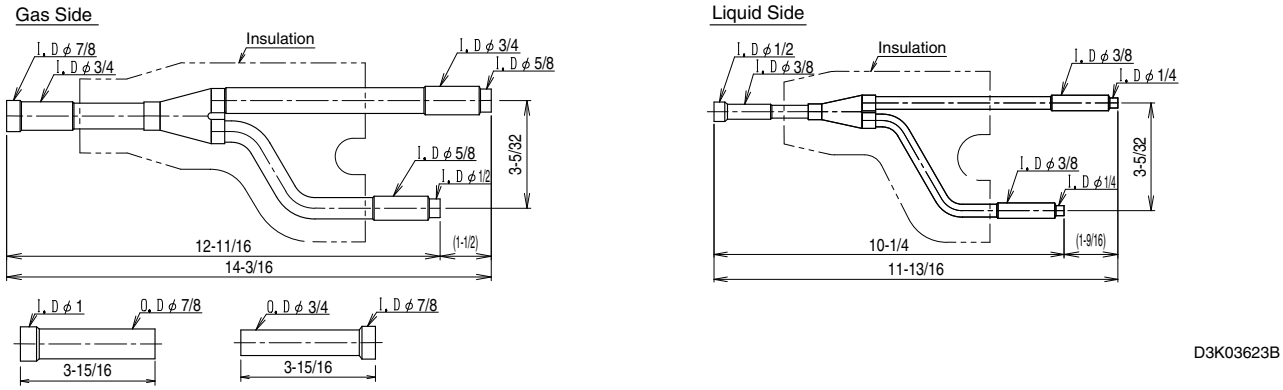
4.1 REFNET Joint (Branch Kit)

RXYQ72~192PAYD / RXYQ216~240PYDNR (460V)
RXYQ72~192PATJ / RXYQ216~240PTJUR (208-230V)

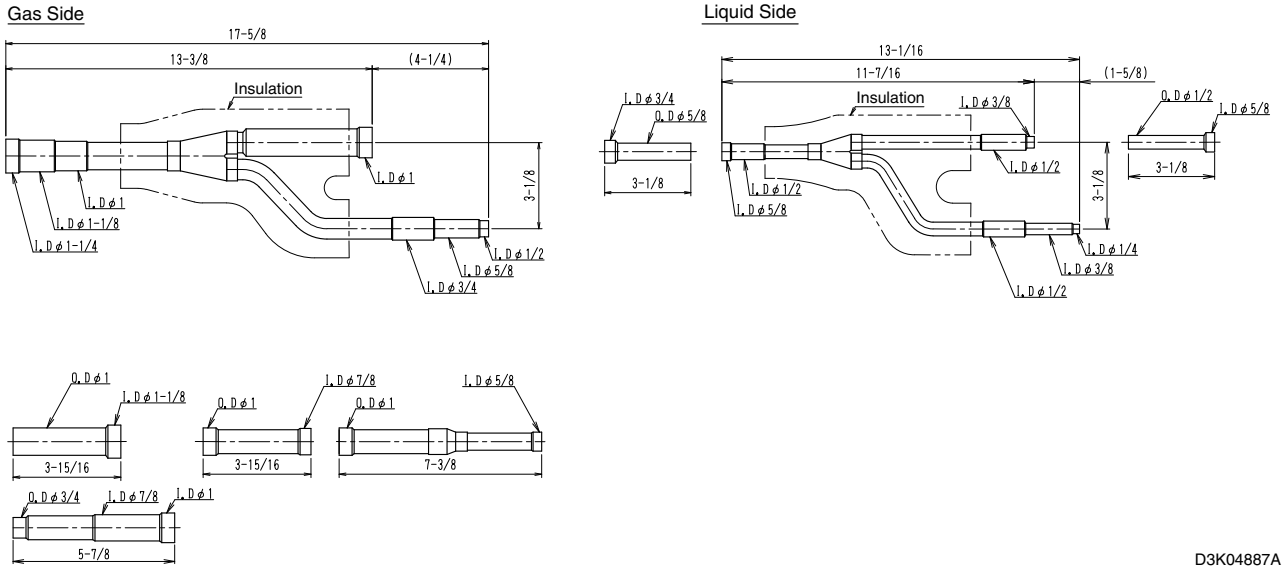
KHRP26A22T



KHRP26A33T



KHRP26M72TU



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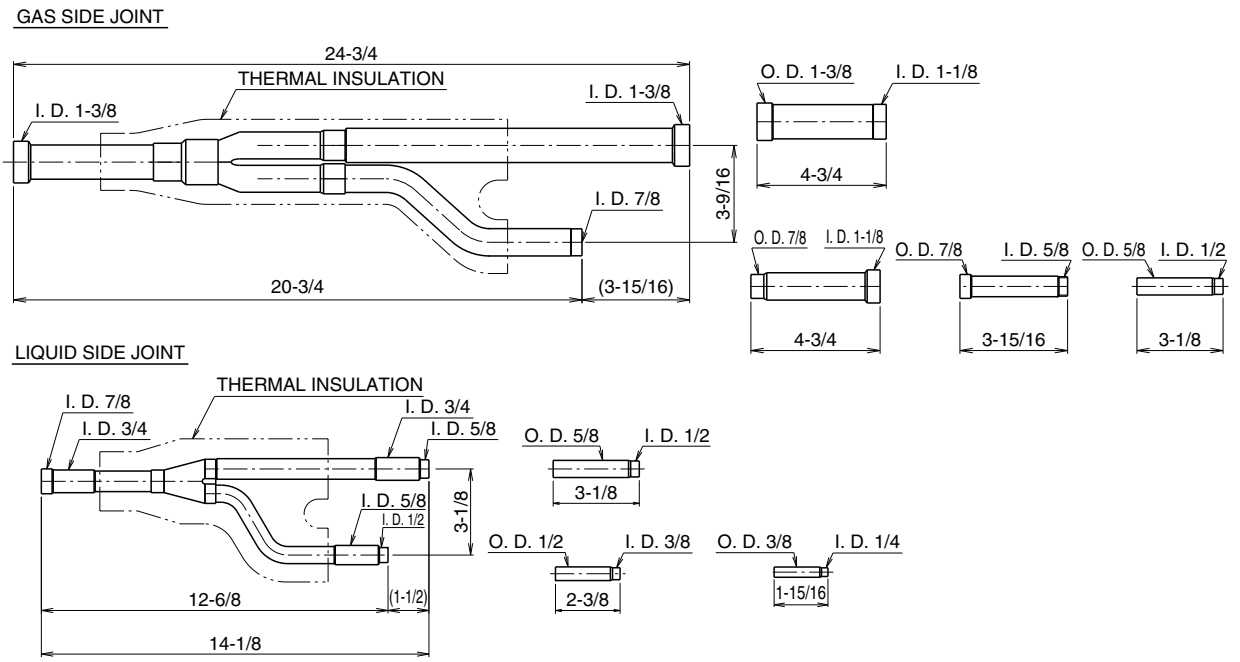
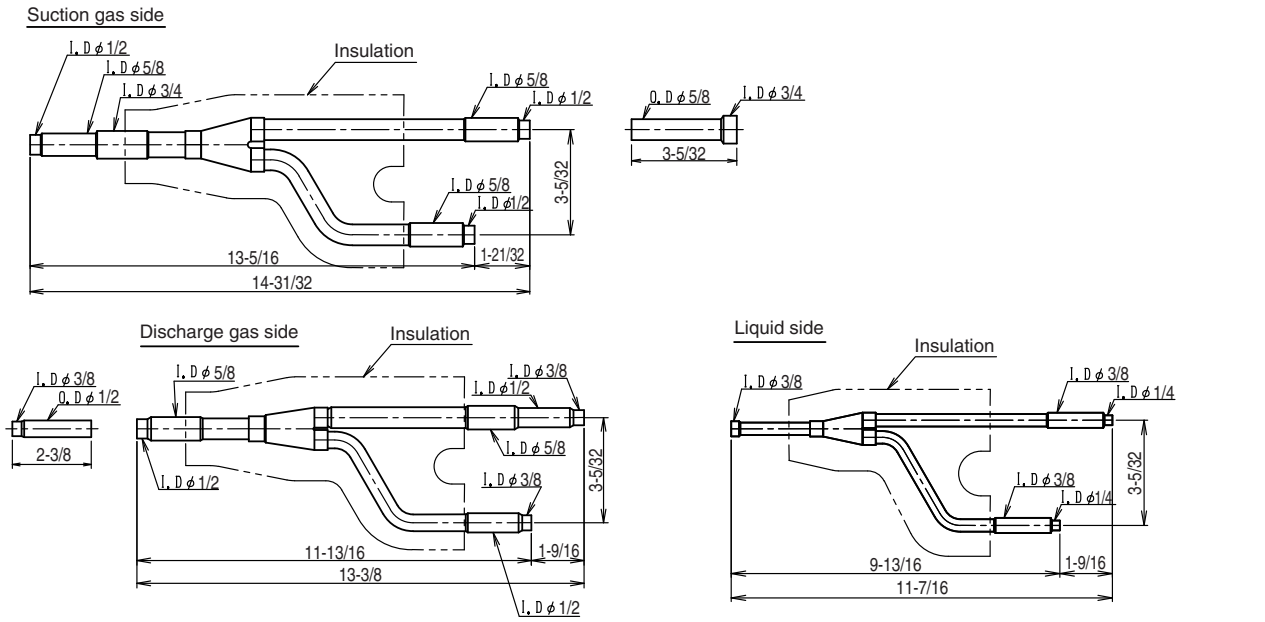


D3K05572A

REYQ72~192PAYD / REYQ216~240PYDNR (460V)
REYQ72~192PATJ / REYQ216~240PTJUR (208-230V)

KHRP25A22T

(unit: in)



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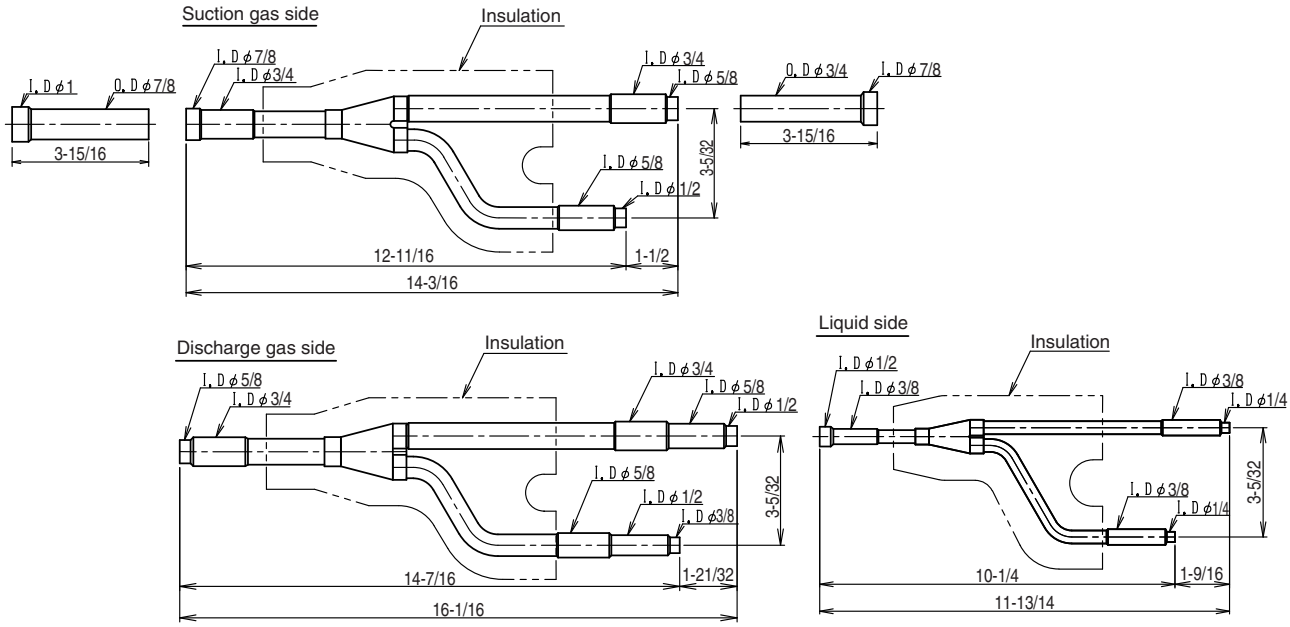

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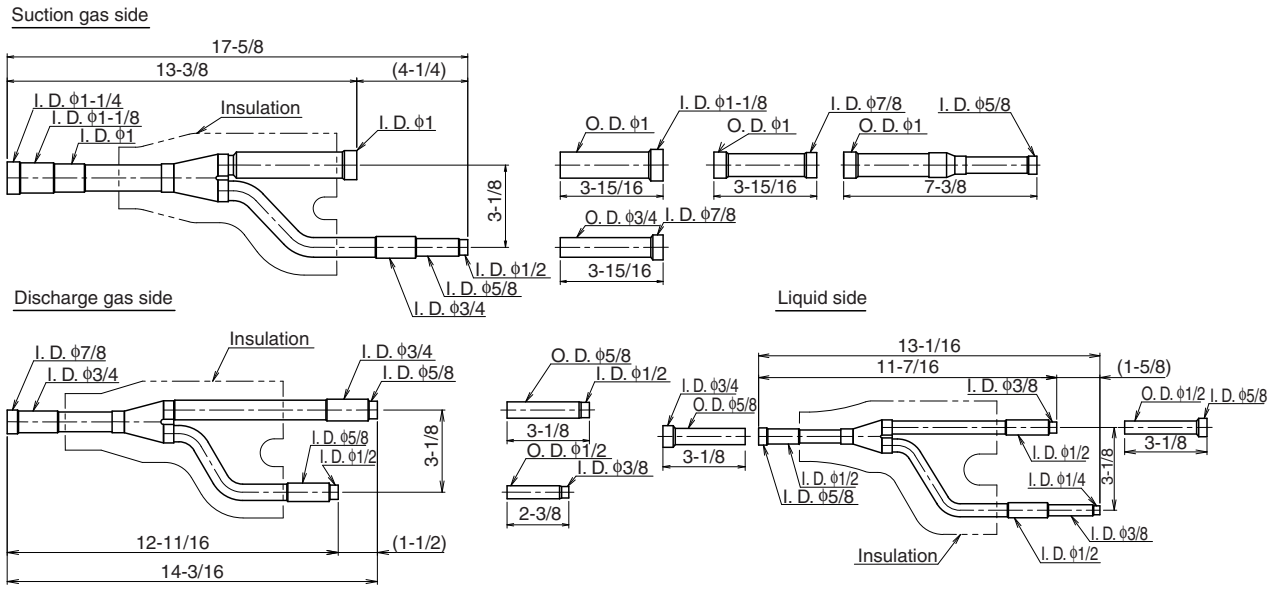
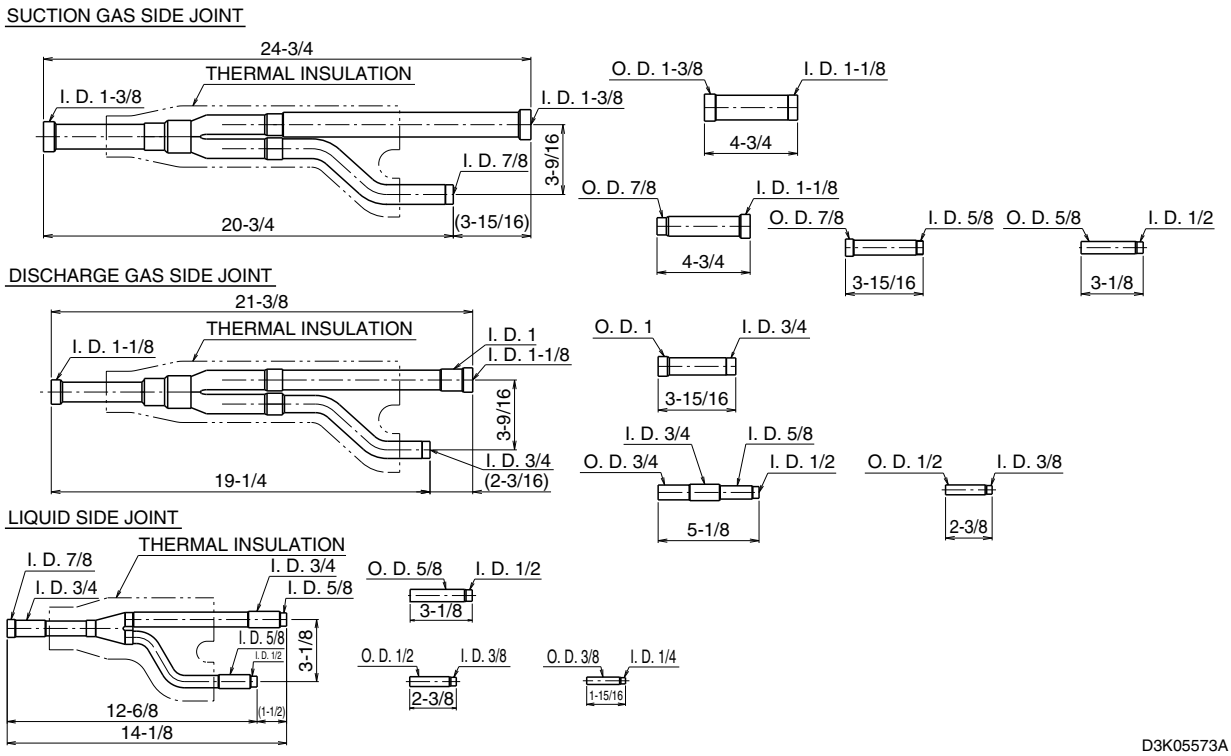


D3K04888B

KHRP25M73TU

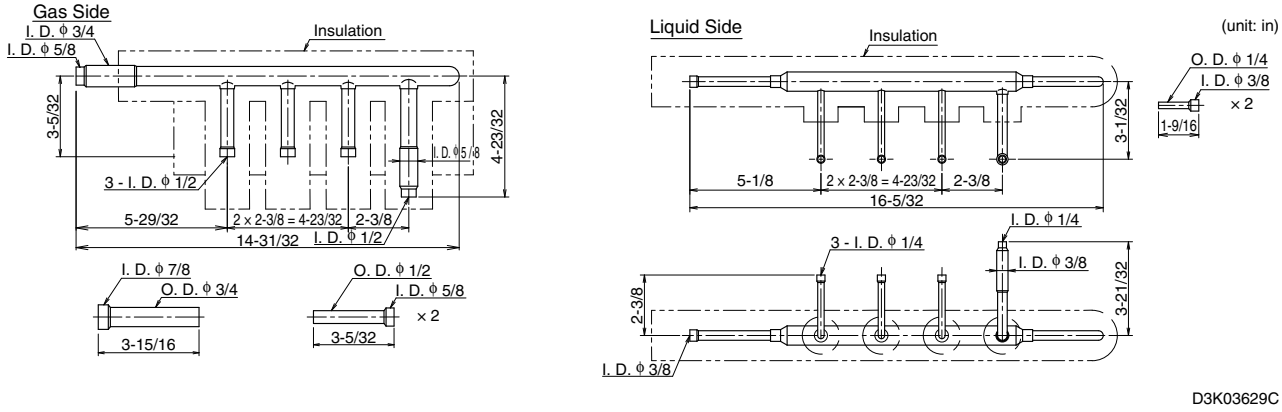


D3K05573A

4.2 REFNET Header (Branch Kit)

RXYQ72~192PAYD / RXYQ216~240PYDNR (460V)
RXYQ72~192PATJ / RXYQ216~240PTJUR (208-230V)

KHRP26M22H



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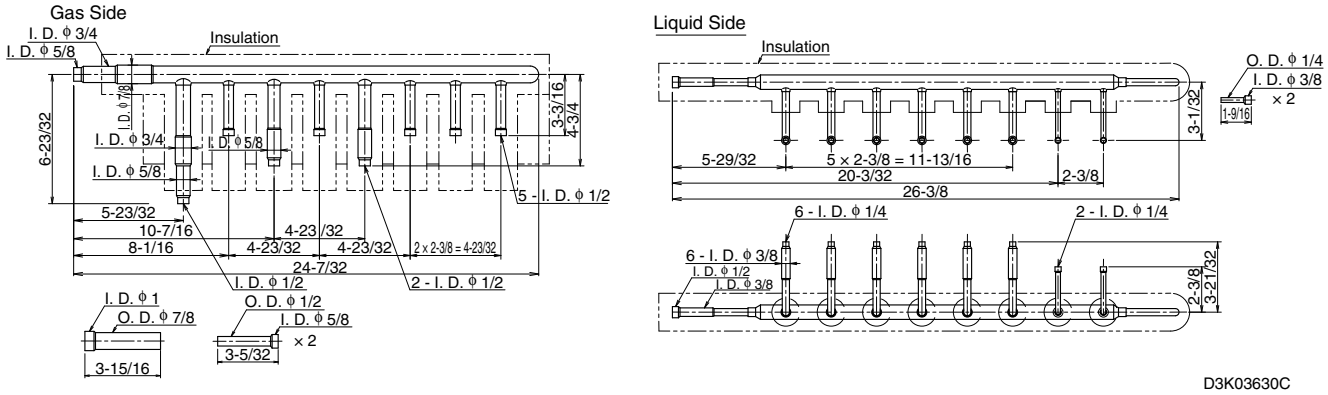

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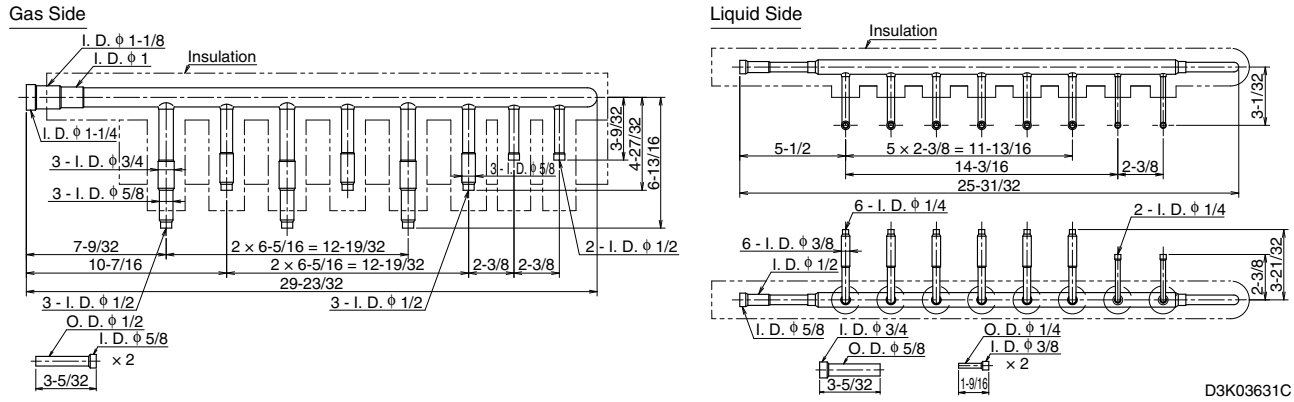

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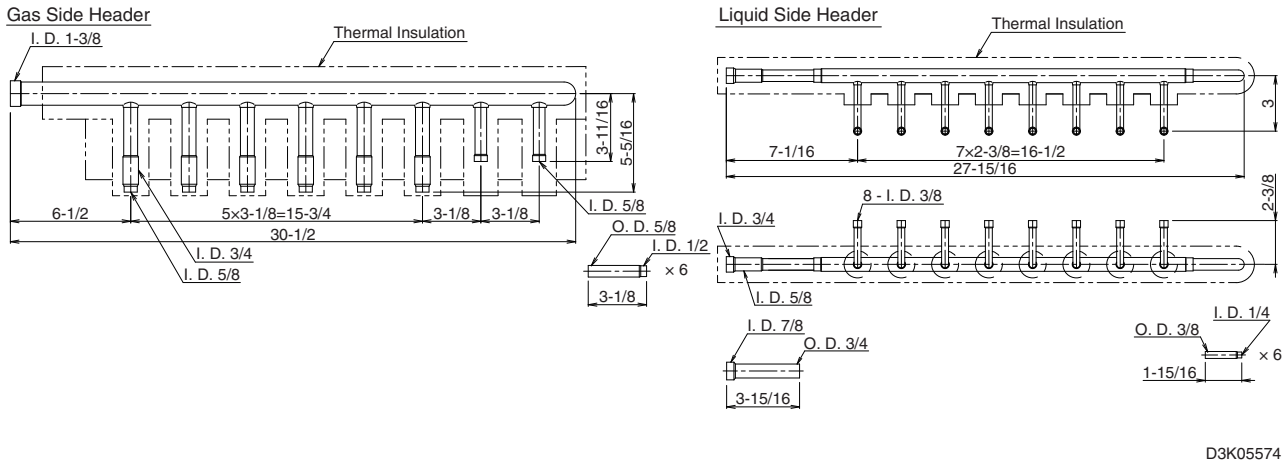
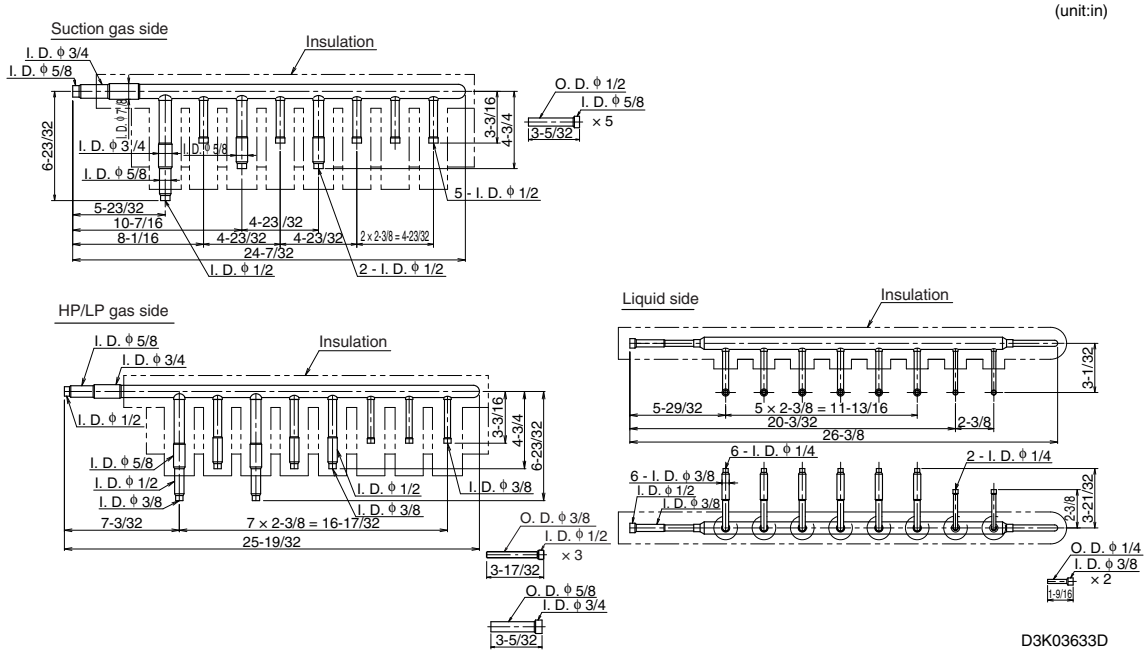


D3K05574

REYQ72~192PAYD / REYQ216~240PYDNR (460V)
REYQ72~192PATJ / REYQ216~240PTJUR (208-230V)

KHRP25M33H

(unit:in)



D3K03633D

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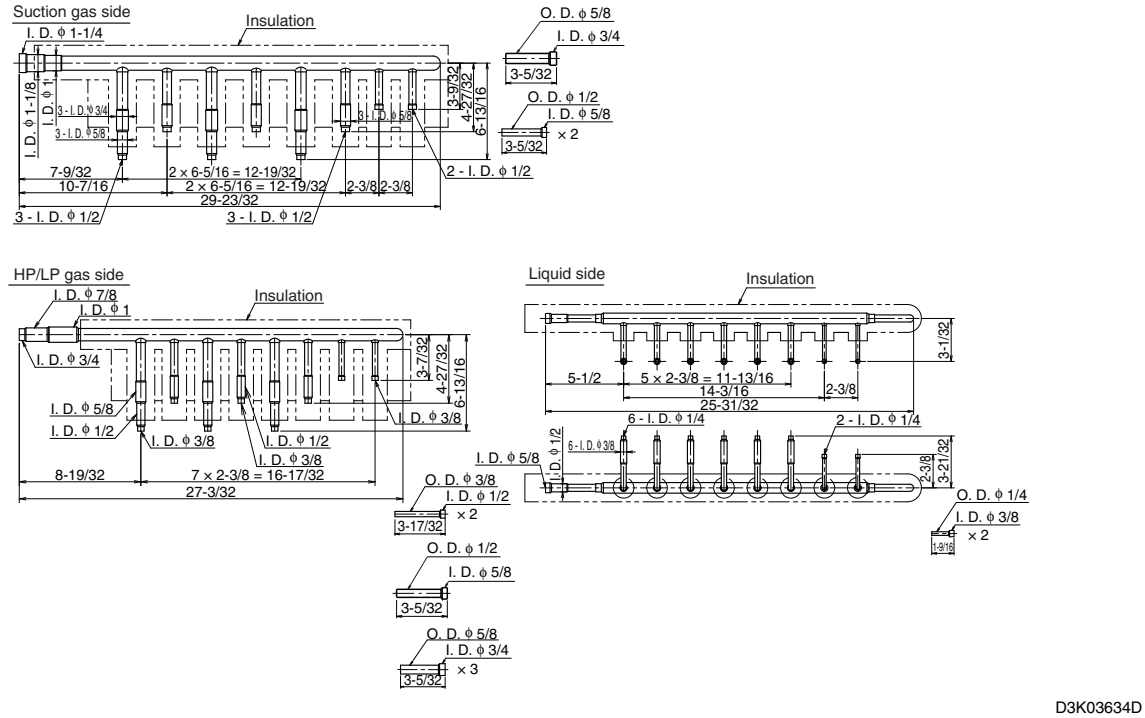
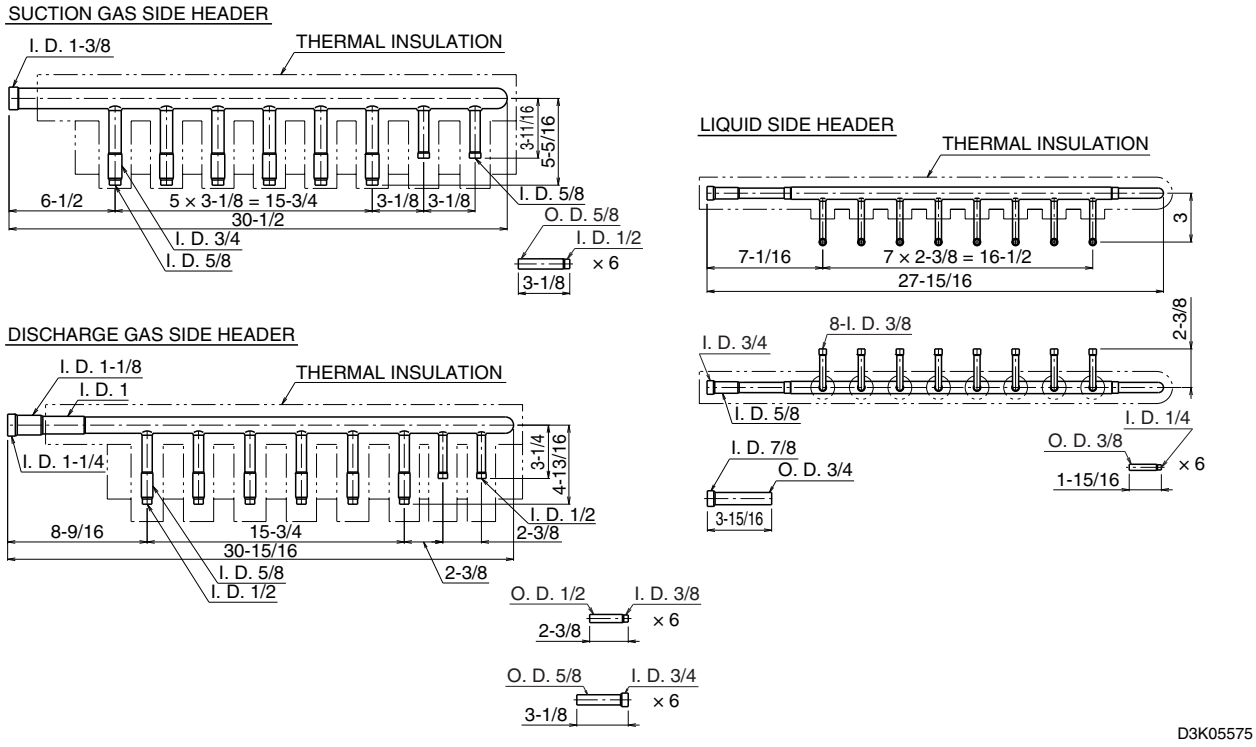


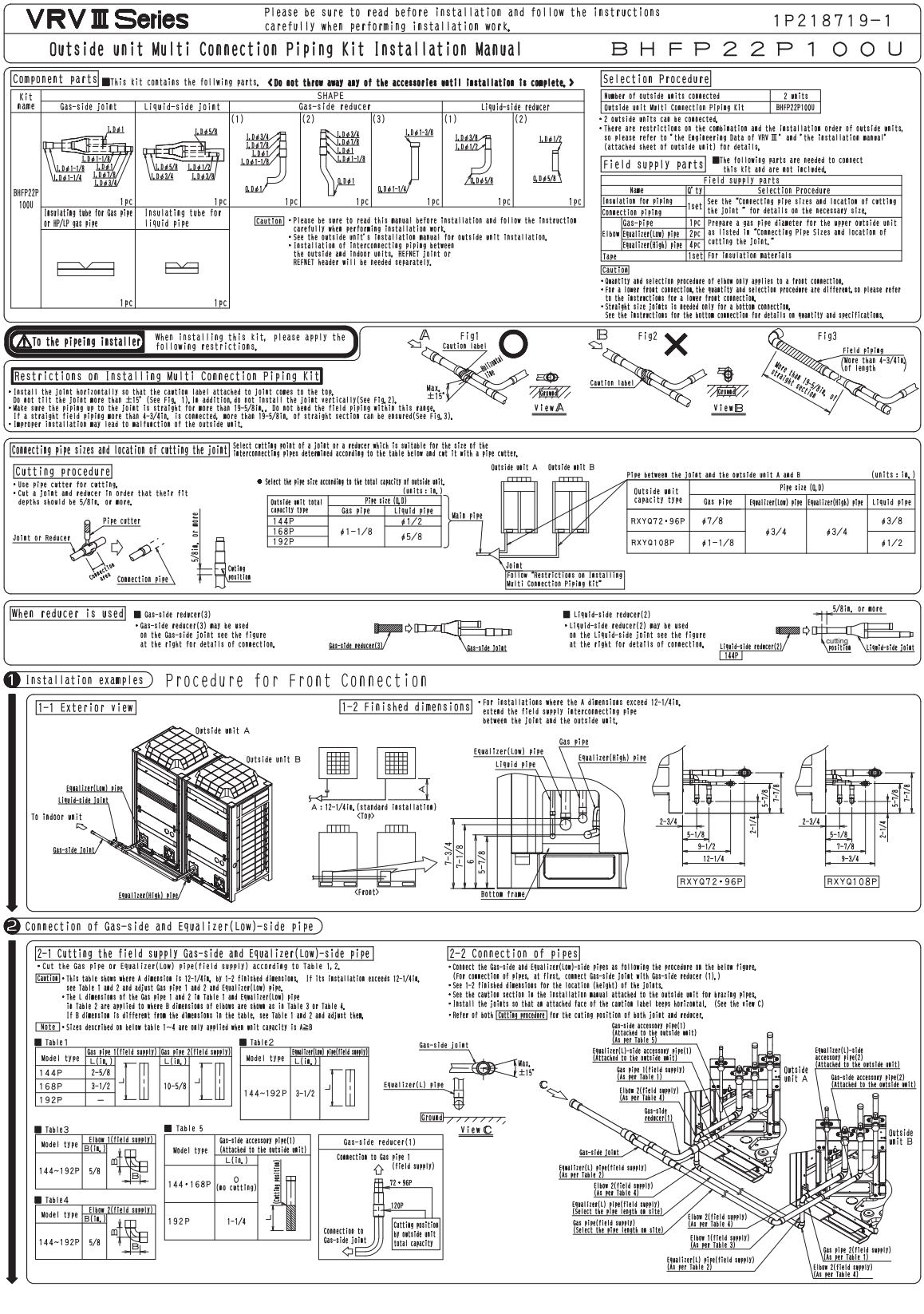
D3K03634D

KHRP25M73HU



4.3 Outdoor Unit Multi Connection Piping Kit

RXYQ72~196PAYD / RXYQ216~240PYDNR (460V)
RXYQ72~196PATJ / RXYQ216~240PTJUR (208-230V)
BHFP22P100U


VRV III Series
Please be sure to read before installation and follow the instructions carefully when performing installation work.
1P218719-1
Outside unit Multi Connection Piping Kit Installation Manual
BHFP22P100U
Component parts
This kit contains the following parts. <Do not throw away any of the accessories until installation is complete.>
Kit Name
SHAPE
Gas-side joint
Liquid-side joint
Gas-side reducer
Liquid-side reducer
BHFP22P100U
Insulating tube for Gas pipe or HP/LP gas pipe
Insulating tube for liquid pipe
Caution
• Please be sure to read this manual before installation and follow the instruction carefully when performing installation work.
• See the outside unit's installation manual for outside unit installation.
• Installation of interconnecting piping between the outside and indoor units, REFNET joint or REFNET header will be needed separately.
Selection Procedure
Number of outside units connected
2 units
Outside unit Multi Connection Piping Kit
BHFP22P100U
• 2 outside units can be connected.
• There are restrictions on the combination and the installation order of outside units, so please refer to "the Engineering Data of VRV III" and "the Installation manual" (attached sheet of outside unit) for details.
Field supply parts
The following parts are needed to connect this kit and are not included.
Field supply parts
Name
Q'ty
Selection Procedure
Insulation for piping
Connection piping
1set
See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Elbow
Gas-pipe
1pc
Prepare a gas pipe diameter for the upper outside unit as listed in "Connecting Pipe Sizes and location of cutting the joint."
Equalizer(Low) pipe
2pc
Equalizer(High) pipe
4pc
Tape
1set
For insulation materials
Caution
• Quantity and selection procedure of elbow only applies to a front connection.
• For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.
• Straight size joints is needed only for a bottom connection. See the instructions for the bottom connection for details on quantity and specifications.
To the piping installer
When installing this kit, please apply the following restrictions.
Restrictions on Installing Multi Connection Piping Kit
• Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than ±15° (See Fig. 1). In addition, do not install the joint vertically(See Fig. 2).
• Make sure the piping up to the joint is straight for more than 19-5/8in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in. is connected, more than 19-5/8in. of straight section can be ensured(See Fig. 3).
• Improper installation may lead to malfunction of the outside unit.
Fig1
Caution label
Horizontal line
Max. ±15°
Ground
View A
Fig2
Caution label
Ground
View B
Fig3
Field piping
More than 19-5/8in. straight section
Connecting pipe sizes and location of cutting the joint
Select cutting point of a joint or a reducer which is suitable for the size of the interconnecting pipes determined according to the table below and cut it with a pipe cutter.
Cutting procedure
• Use pipe cutter for cutting.
• Cut a joint and reducer in order that their fit depths should be 5/8in. or more.
Pipe cutter
Joint or Reducer
Connection pipe
5/8in. or more
Cutting position
• Select the pipe size according to the total capacity of outside unit.
(units : in.)
Outside unit total capacity type
Pipe size (O.D)
Gas pipe
Liquid pipe
144P
168P
192P
ø1-1/8
ø1/2
ø5/8
Main pipe
Outside unit A
Outside unit B
Joint
Follow "Restrictions on Installing Multi Connection Piping Kit"
Pipe between the joint and the outside unit A and B
(units : in.)
Outside unit capacity type
Pipe size (O.D)
Gas pipe
Equalizer(Low) pipe
Equalizer(High) pipe
Liquid pipe
RXYQ72・96P
ø7/8
ø3/4
ø3/4
ø3/8
RXYQ108P
ø1-1/8
ø1/2
When reducer is used
■ Gas-side reducer(3)
• Gas-side reducer(3) may be used on the Gas-side joint see the figure at the right for details of connection.
Gas-side reducer(3)
Gas-side joint
■ Liquid-side reducer(2)
• Liquid-side reducer(2) may be used on the Liquid-side joint see the figure at the right for details of connection.
5/8in. or more
Liquid-side reducer(2)
144P
cutting position
Liquid-side joint
1 Installation examples
Procedure for Front Connection
1-1 Exterior view
Outside unit A
Outside unit B
Equalizer(Low) pipe
Liquid-side joint
To Indoor unit
Gas-side joint
Equalizer(High) pipe
1-2 Finished dimensions
• For installations where the A dimensions exceed 12-1/4in, extend the field supply interconnecting pipe between the joint and the outside unit.
A : 12-1/4in. (standard installation)
<Top>
<Front>
Equalizer(Low) pipe
Gas pipe
Liquid pipe
Equalizer(High) pipe
7-3/4
7-1/8
6
5-7/8
Bottom frame
2-3/4
5-1/8
9-1/2
12-1/4
2-1/4
1-7/8
5-7/8
RXYQ72・96P
RXYQ108P
2 Connection of Gas-side and Equalizer(Low)-side pipe
2-1 Cutting the field supply Gas-side and Equalizer(Low)-side pipe
• Cut the Gas pipe or Equalizer(Low) pipe(field supply) according to Table 1, 2.
Caution
• This table shows where A dimension is 12-1/4in. or less. If A dimension exceeds 12-1/4in, see Table 1 and 2 and adjust Gas pipe 1 and 2 and Equalizer(Low) pipe.
• The L dimensions of the Gas pipe 1 and 2 in Table 1 and Equalizer(Low) pipe in Table 2 are applied to where B dimensions of elbows are shown as in Table 3 or Table 4. If B dimension is different from the dimensions in the table, see Table 1 and 2 and adjust them.
Note
• Sizes described on below table 1~4 are only applied when unit capacity is A≧B
■ Table1
Model type
Gas pipe 1(field supply) L (in.)
Gas pipe 2(field supply) L (in.)
144P
2-5/8
168P
3-1/2
10-5/8
192P
—
■ Table2
Model type
Equalizer(Low) pipe(field supply) L (in.)
144~192P
3-1/2
■ Table3
Model type
Elbow 1(field supply) B (in.)
144~192P
5/8
■ Table4
Model type
Elbow 2(field supply) B (in.)
144~192P
5/8
■ Table 5
Model type
Gas-side accessory pipe(1) (Attached to the outside unit) L (in.)
144・168P
0 (no cutting)
192P
1-1/4
Caution position
Gas-side reducer(1)
Connection to Gas pipe 1 (field supply)
72・96P
120P
Connection to Gas-side joint
Cutting position by outside unit total capacity
2-2 Connection of pipes
• Connect the Gas-side and Equalizer(Low)-side pipes as following the procedure on the below figure. (For connection of pipes, at first, connect Gas-side joint with Gas-side reducer (1).)
• See 1-2 Finished dimensions for the location (height) of the joints.
• See the caution section 1 in the installation manual attached to the outside unit for brazing pipes.
• Install the joints so that an attached face of the caution label keeps horizontal. (See the view C)
• Refer of both Cutting procedure for the cuting position of both joint and reducer.
Gas-side joint
Max. ±15°
Equalizer(L) pipe
Ground
View C
Gas-side accessory pipe(1) (Attached to the outside unit) (As per Table 5)
Equalizer(L)-side accessory pipe(1) (Attached to the outside unit)
Gas pipe 1(field supply) (As per Table 1)
Elbow 2(field supply) (As per Table 4)
Gas-side reducer(1)
Equalizer(L)-side accessory pipe(2) (Attached to the outside unit)
Gas-side accessory pipe(2) (Attached to the outside unit)
Outside unit A
Outside unit B
Gas-side joint
Equalizer(L) pipe(field supply) (As per Table 2)
Elbow 2(field supply) (As per Table 4)
Equalizer(L) pipe(field supply) (Select the pipe length on site)
Gas pipe(field supply) (Select the pipe length on site)
Elbow 2(field supply) (As per Table 4)
Elbow 1(field supply) (As per Table 3)
Gas pipe 2(field supply) (As per Table 1)
Equalizer(L) pipe(field supply) (As per Table 2)
Elbow 2(field supply) (As per Table 4)

C: 1P218719

❸ Connection of Liquid-side and equalizer(High) pipe

3-1 Cutting the field supply Liquid-side and equalizer(High) pipe

- Cut the equalizer(High) pipe(field supply) according to Table 1.

Caution
- This table shows the case when the A dimensions shown in 1-2 Finished dimensions is 12-1/4in. If the A dimensions exceed 12-1/4in, see Table 1 and adjust the dimensions of the equalizer(High) pipe 1 and 2.
- The L dimensions of the equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2. If the B dimension is not same with Table 2, see Table 1, and adjust them accordingly.

Note
- Sizes described on below table 1 and 2 are only applied when unit capacity is A≥B

3-2 Connection of pipes

- Connect the liquid-side and equalizer(High) pipes as shown in the right figure. (For connection of pipes, at first, connect Liquid-side joint with Liquid-side reducer (1).)
- See 1-2 Finished dimensions for the location (height) of the joint.
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Connect Liquid-side reducer (1) as at about 40° inclination and bend the field supplied liquid pipe up to the stop valve as following the procedure on right figure.
- Refer of both Cutting procedure for the cuting position of both joint and reducer.

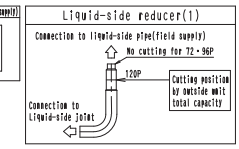
Caution
- If the liquid side reducer is connected horizontally without bending the liquid pipes, the insulation will not fit.

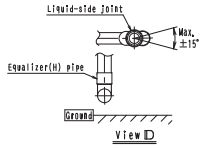
■ Table 1

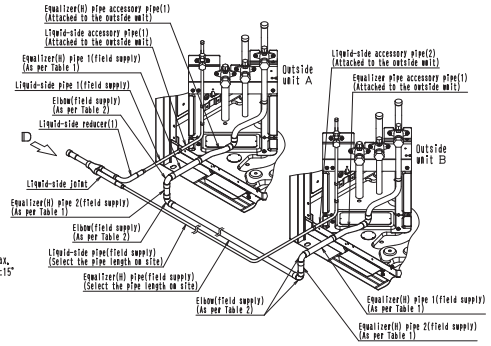
Equalizer(H) pipe 1(field supply) L(in.)	Equalizer(H) pipe 2(field supply) L(in.)
2-7/8	2-3/8

■ Table 2

Elbow(field supply) B(in.)
5/8





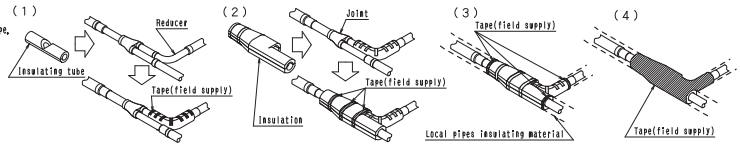

Equalizer(H) pipe accessory pipe(1) (Attached to the outside unit)
Liquid-side accessory pipe(1) (Attached to the outside unit)
Equalizer(H) pipe 1(field supply) (As per Table 1)
Liquid-side pipe 1(field supply)
Elbow(field supply) (As per Table 2)
Liquid-side reducer(1)
D
Liquid-side joint
Equalizer(H) pipe 2(field supply) (As per Table 1)
Elbow(field supply) (As per Table 2)
Liquid-side pipe(field supply) (Select the pipe length on site)
Equalizer(H) pipe(field supply) (Select the pipe length on site)
Outside unit A
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Outside unit B
Elbow(field supply) (As per Table 2)
Equalizer(H) pipe 1(field supply) (As per Table 1)
Equalizer(H) pipe 2(field supply) (As per Table 1)

❹ The work after the kit is connected

Connection of piping between the outside unit and the indoor unit
Air tight test
} Follow the instructions in the installation manual included with the outside unit, when performing installation work.

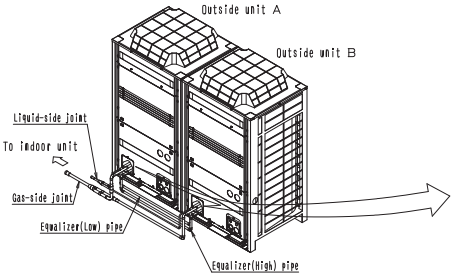
Insulation of joints

(1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces. (See the figure at the right.)
(3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4) Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)



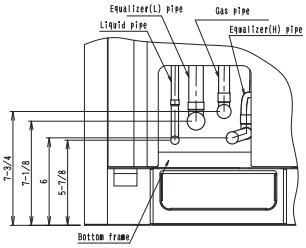
❶ Installation examples Procedure for Lower Front Connection

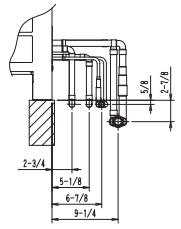
1-1 Exterior view



1-2 Finished dimensions

- A standard installation has the following dimensions.
- When the dimensions exceed the standard installation, extend the pipes between the outside unit and the joint(field supply).





❷ Connection of Gas-side and Equalizer(Low)-side pipe

2-1 Cutting the field supply Gas-side and Equalizer(Low)-side pipe

- Cut the according to Table 1, 2.

Caution
- The L dimensions of Gas pipe 1~4 in Table 1 and Equalizer(Low) pipe in Table 2 show those when the field supply elbows have B dimension in Table 3 and Table 4, if the B dimension is not same with Table 3 and Table 4, see Table 1 and 2, and adjust them accordingly.

Note
- Sizes described on below table 1~4 are only applied when unit capacity is A≥B

■ Table 1

Model type	Gas pipe 1(field supply) L(in.)	Gas pipe 2(field supply) L(in.)	Gas pipe 3(field supply) L(in.)	Gas pipe 4(field supply) L(in.)
144P	7-5/8	6-3/8	2-1/2	9-1/2
168P	7-1/2		3-1/2	
192P	—		6-1/8	

■ Table2

Model type	Equalizer(L) pipe(field supply) L(in.)
144~192P	6-3/8

■ Table3

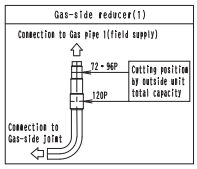
Model type	Elbow 1(field supply) B(in.)	Elbow 2(field supply) B(in.)
144P	5/8	5/8
168P	1	
192P	1-1/8	

■ Table4

Model type	Elbow 3(field supply) B(in.)
144~192P	5/8

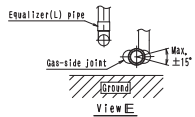
■ Table 5

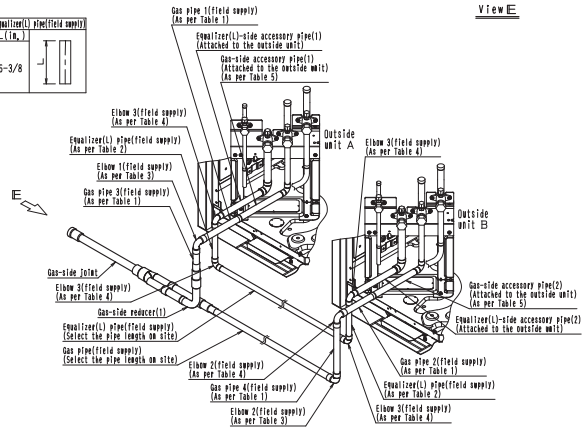
Model type	Gas-side accessory pipe(1) (Attached to the outside unit) L(in.)	Gas-side accessory pipe(2) (Attached to the outside unit) L(in.)
144P	○ (no cutting)	○ (no cutting)
168P		
192P	1/2	



2-2 Connection of pipes

- Connect the Gas-side and Equalizer(Low)-side pipes as shown in the below figure. (When connecting the pipes, first connect Gas-side joint and Gas-side reducer(1).)
- See 1-2 Finished dimensions for the location(height) of the joints.
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal(See the View E).
- Refer of both Cutting procedure for the cuting position of both joint and reducer.




Gas pipe 1(field supply) (As per Table 1)
Equalizer(L)-side accessory pipe(1) (Attached to the outside unit)
Gas-side accessory pipe(1) (Attached to the outside unit) (As per Table 5)
Elbow 3(field supply) (As per Table 4)
Equalizer(L) pipe(field supply) (As per Table 2)
Elbow 1(field supply) (As per Table 3)
Gas pipe 3(field supply) (As per Table 1)
E
Outside unit A
Elbow 3(field supply) (As per Table 4)
Outside unit B
Gas-side joint
Elbow 3(field supply) (As per Table 4)
Gas-side reducer(1)
Equalizer(L) pipe(field supply) (Select the pipe length on site)
Gas pipe(field supply) (Select the pipe length on site)
Gas-side accessory pipe(2) (Attached to the outside unit) (As per Table 5)
Equalizer(L)-side accessory pipe(2) (Attached to the outside unit)
Elbow 2(field supply) (As per Table 4)
Gas pipe 2(field supply) (As per Table 1)
Gas pipe 4(field supply) (As per Table 1)
Equalizer(L) pipe(field supply) (As per Table 2)
Elbow 2(field supply) (As per Table 3)
Elbow 3(field supply) (As per Table 4)

continue to reverse side

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❸ Connection of Liquid-side and equalizer(High) pipe

3-1 Cutting the field supply Liquid-side and equalizer(High) pipe

- Cut the equalizer(High) pipe(field supply) according to Table 1.

Caution • This table shows the case when the A dimensions shown in 1-2 Finished dimensions is 11-7/8in.. If the A dimensions exceed 11-7/8in, see Table 1 and adjust the dimensions of Equalizer(High) pipe 1 and 2.
• The L dimensions of Equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2 shown in "procedure for front connection" and "connection of Liquid-side and equalizer pipe". If the B dimension is not same with Table, see Table 1 and 2, and adjust them accordingly.

Note • Sizes described on below table 1 are only applied when unit capacity is A≥B

3-2 Connection of pipes

- Connect the liquid-side and equalizer(High) pipe as shown in the right figure. (When connecting the pipes, first connect Liquid-side joint and Liquid side reducer(1).)
- See 1-2 Finished dimensions for the location(height) of the joint.
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joint in such a way that the attached face of the caution label becomes horizontal(See the View F).
- Connect the liquid side reducer(1) tilting approx. 90° and bend the field supplied liquid pipe up to the stop valve as shown in the figure below. (See the view F)
- Refer of both Cutting procedure for the cuting position of both joint and reducer.

Caution • If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.

Liquid-side reducer(1)

Connection to liquid-side pipe(field supply)

No cutting for 72・96P

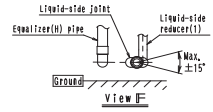
120P

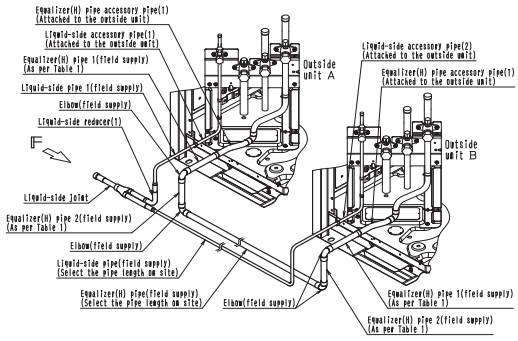
Cutting position by outside unit total capacity

Connection to Liquid-side joint

■ Table 1

Equalizer(H) pipe 1(field supply) L(in.)	Equalizer(H) pipe 2(field supply) L(in.)
2-7/8	5-1/4




Equalizer(H) pipe accessory pipe(1) (Attached to the outside unit)
Liquid-side accessory pipe(1) (Attached to the outside unit)
Equalizer(H) pipe 1(field supply) (As per Table 1)
Liquid-side pipe 1(field supply)
Elbow(field supply)
Liquid-side reducer(1)
F
Liquid-side joint
Equalizer(H) pipe 2(field supply) (As per Table 1)
Elbow(field supply)
Liquid-side pipe(field supply) (Select the pipe length on site)
Equalizer(H) pipe(field supply) (Select the pipe length on site)
Elbow(field supply)
Outside unit A
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer(H) pipe accessory pipe(1) (Attached to the outside unit)
Outside unit B
Equalizer(H) pipe 1(field supply) (As per Table 1)
Equalizer(H) pipe 2(field supply) (As per Table 1)

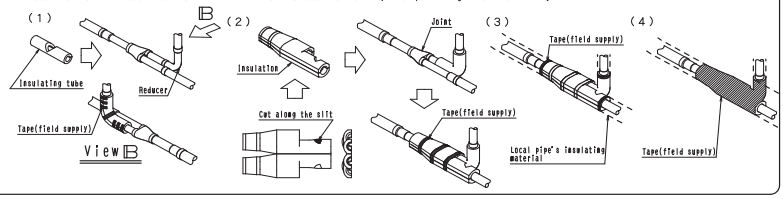
❹ The work after the kit is connected

Connection of piping between the outside unit and the indoor unit } Follow the instructions in the installation manual included with the outside unit, when performing installation work.

Air tight test

Insulation of joints

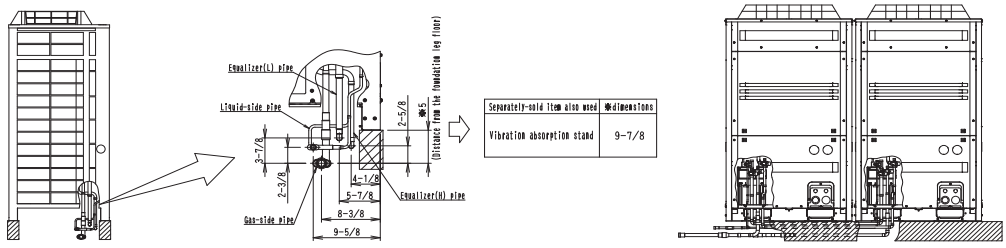
(1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2) Cut insulating tube along the slit.(See the figure at the right.) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
(3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4) Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)



❶ Installation examples — Procedure for Bottom Connection

⚠Caution This installation is only possible if there is enough space to perform brazing and racking underneath the outside unit. If a centralized vibration proof base is used, the dimensions marked with "※" in the figure below will vary, so see the table below and determine the length of the field pipes.

1-1 Exterior view



Separately-sold item also used	※dimensions
Vibration absorption stand	9-7/8

❷ Connection of Gas-side and Equalizer(Low)-side pipe

2-1 Cutting the field supply Gas-side pipe and Equalizer(Low)-side pipe and the Gas-side accessory pipe(2) attached to the outside unit

- Cut the pipes according to Table 1 or 2.

Caution • The "L" dimensions of Gas pipe 1 in Table 1 are identical to the "B" dimensions in Table 3 and Table 4, those of "field supply elbows" shown in "Procedure for Front Connection" and "Connection of Gas-side and Equalizer(Low)-side pipe", which are equivalent to "straight size joint" with stopper. If the "B" dimensions are not identical to table or "straight size joint" is without sttoper, adjust them as Table 1 show.

Note • Sizes described on below table 1and 2 are only applied when unit capacity is A≥B

■ Table 1

Model type	Gas-side accessory pipe(1) (Attached to the outside unit) L(in.)	Gas-side accessory pipe(2) (Attached to the outside unit) L(in.)	Gas pipe 1(field supply) L(in.)
144P	2-3/4	(Cutting position)	4
168P	0 (no cutting)	0 (no cutting)	
192P	4-1/2	(Cutting position)	

Gas-side reducer(1)

Connection to Gas pipe 1 (field supply)

72・96P

120P

Cutting position by outside unit total capacity

Connection to Gas-side joint

Gas-side reducer(2)

Connection to Gas pipe (field supply)

72・96P

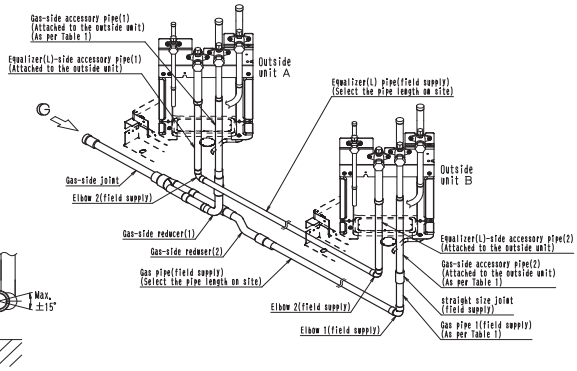
120P

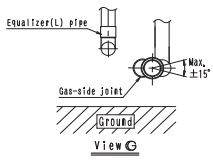
Cutting position by outside unit total capacity

Connection to Gas-side joint

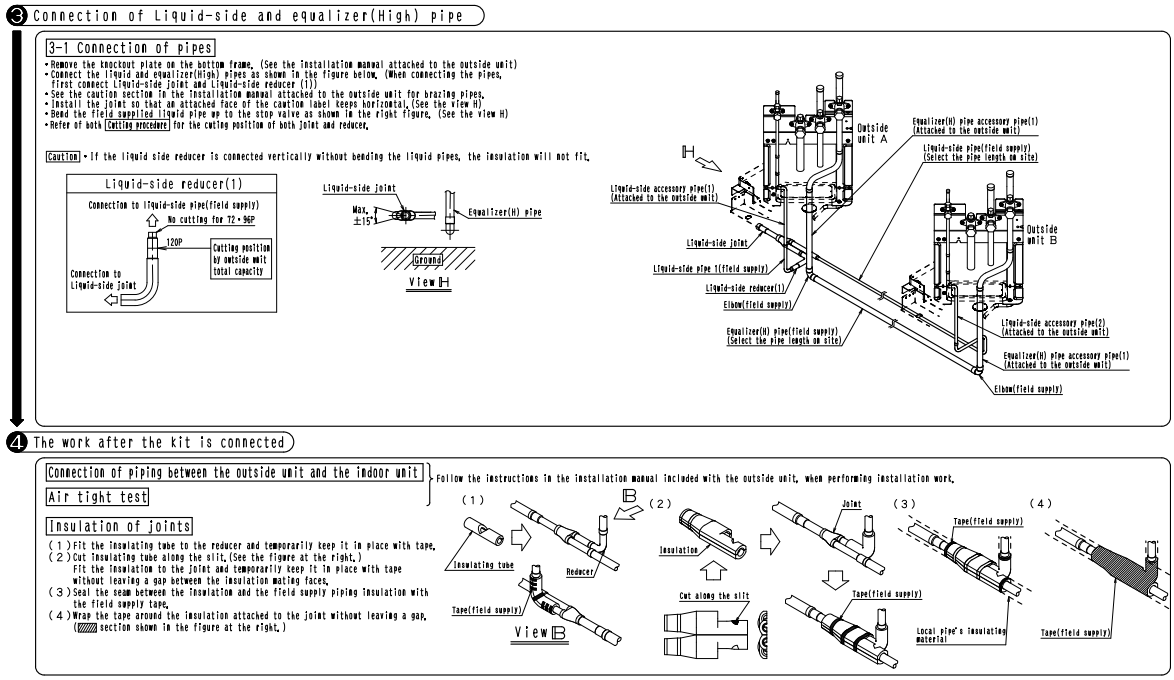
2-2 Connection of pipes

- Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit)
- Connect the Gas-side and Equalizer(Low)-side pipe as shown in the figure below. (When connecting the pipes, first connect the Gas-side joint and the Gas-side reducer(1))
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal.(See the view G)
- Refer of both Cutting procedure for the cuting position of both joint and reducer.


Gas-side accessory pipe(1) (Attached to the outside unit) (As per Table 1)
Equalizer(L)-side accessory pipe(1) (Attached to the outside unit)
G
Gas-side joint
Elbow 2(field supply)
Gas-side reducer(1)
Gas-side reducer(2)
Gas pipe(field supply) (Select the pipe length on site)
Elbow 2(field supply)
Elbow 1(field supply)
Outside unit A
Equalizer(L) pipe(field supply) (Select the pipe length on site)
Outside unit B
Equalizer(L)-side accessory pipe(2) (Attached to the outside unit)
Gas-side accessory pipe(2) (Attached to the outside unit) (As per Table 1)
straight size joint (field supply)
Gas pipe 1(field supply) (As per Table 1)



C: 1P218720


❸ Connection of Liquid-side and equalizer(High) pipe
3-1 Connection of pipes
• Remove the knockout plate on the bottom frame. (See the Installation manual attached to the outside unit)
• Connect the liquid and equalizer(High) pipes as shown in the figure below. (When connecting the pipes, first connect Liquid-side joint and Liquid-side reducer (1))
• See the caution section in the installation manual attached to the outside unit for brazing pipes.
• Install the joint so that an attached face of the caution label keeps horizontal. (See the view H)
• Bend the field supplied liquid pipe up to the stop valve as shown in the right figure. (See the view H)
• Refer of both Cutting procedure for the cutting position of both joint and reducer.
Caution • If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.
Liquid-side reducer(1)
Connection to liquid-side pipe(field supply)
No cutting for 72 • 96P
120P
Cutting position by outside unit total capacity
Connection to Liquid-side joint
Liquid-side joint
Max. ±15°
Equalizer(H) pipe
Ground
View H
Outside unit A
Outside unit B
Equalizer(H) pipe accessory pipe(1) (Attached to the outside unit)
Liquid-side pipe(field supply) (Select the pipe length on site)
Liquid-side accessory pipe(1) (Attached to the outside unit)
Liquid-side joint
Liquid-side pipe T(field supply)
Liquid-side reducer(1)
Elbow(field supply)
Equalizer(H) pipe(field supply) (Select the pipe length on site)
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer(H) pipe accessory pipe(1) (Attached to the outside unit)
Elbow(field supply)
❹ The work after the kit is connected
Connection of piping between the outside unit and the indoor unit
Air tight test
Insulation of joints
Follow the instructions in the installation manual included with the outside unit, when performing installation work.
(1)Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2)Cut insulating tube along the slit. (See the figure at the right.)
Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
(3)Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4)Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)
(1)
B
(2)
(3)
(4)
Insulating tube
Reducer
Tape(field supply)
View B
Insulation
Cut along the slit
Joint
Tape(field supply)
Local pipe's insulating material
Tape(field supply)
Tape(field supply)

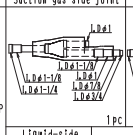
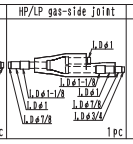
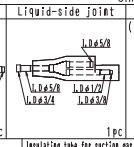
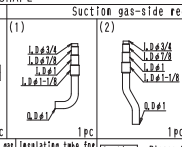
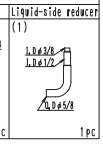
C: 1P218720

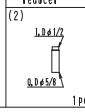
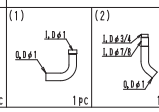
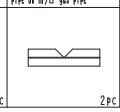
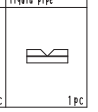
REYQ72~192PAYD / REYQ216~240PYDNR (460V)
REYQ72~192PATJ / REYQ216~240PTJUR (208-230V)
BHFP26P90U

VRV III R Series — Please be sure to read before installation and follow the instructions carefully when performing installation work. 1P218714-1

Outside unit Multi Connection Piping Kit Installation Manual — B H F P 2 6 P 9 0 U

Component parts ■This kit contains the following parts. <Do not throw away any of the accessories until installation is complete.>

Kit name	SHAPE				
	Suction gas-side joint	HP/LP gas-side joint	Liquid-side joint	Suction gas-side reducer	Liquid-side reducer
BHFP26P90U	 1PC	 1PC	 1PC	 1PC	 1PC

Liquid-side reducer	HP/LP gas-side reducer	Insulating tube for suction gas pipe or HP/LP gas pipe	Insulating tube for liquid pipe
 1PC	 1PC	 2PC	 1PC

Caution
- Please be sure to read this manual before installation and follow the instruction carefully when performing installation work.
- See the outside unit's installation manual for outside unit installation.
- Installation of interconnecting piping between the outside and indoor units, REFNET joint or REFNET header will be needed separately.

Selection Procedure

Number of outside units connected	2 units
Outside unit Multi Connection Piping Kit	BHFP26P90U

- 2 outside units can be connected.
- There are restrictions on the combination and the installation order of outside units, so please refer to "the Engineering Data of VRV III R" and "the Installation manual" (attached sheet of outside unit) for details.

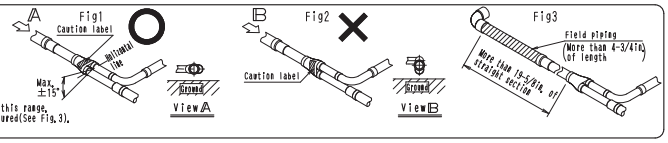
Field supply parts ■The following parts are needed to connect this kit and are not included.

Field supply parts			
Name		Q'ty	Selection Procedure
Insulation for piping		1set	See the "Connecting pipe sizes and location of cutting the joint" for details on the necessary size.
Connection piping		1set	Prepare a gas pipe diameter for the upper outside unit as listed in "Connecting Pipe Sizes and location of cutting the joint."
Elbow	Suction gas-pipe	1pc	
	HP/LP gas-pipe	2pc	
	Equalizer pipe	4pc	
Tape		1set	For insulation materials

Caution
- Quantity and selection procedure of elbow only applies to a front connection.
- For a lower front connection, the quantity and selection procedure are different, so please refer to the instructions for a lower front connection.
- Straight size joints is needed only for a bottom connection. See the instructions for the bottom connection for details on quantity and specifications.

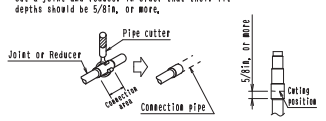
To the pipeing installer When installing this kit, please apply the following restrictions.

Restrictions on Installing Multi Connection Piping Kit
- Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than ±15° (See Fig. 1). In addition, do not install the joint vertically(See Fig.2).
- Make sure the piping up to the joint is straight for more than 19-5/8in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in. is connected, more than 19-5/8in. of straight section can be ensured(See Fig.3).
- Improper installation may lead to malfunction of the outside unit.



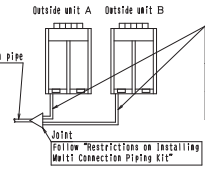
Connecting pipe sizes and location of cutting the joint Select cutting point of a joint or a reducer which is suitable for the size of the interconnecting pipes determined according to the table below and cut it with a pipe cutter.

Cutting procedure
- Use pipe cutter for cutting.
- Cut a joint and reducer in order that their fit depths should be 5/8in. or more.



● Select the pipe size according to the total capacity of outside unit. (units : in.)

Outside unit total capacity type	Pipe size (O.D)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
144P	ø1-1/8	ø7/8	ø1/2
168P			ø5/8
192P		ø1-1/8	



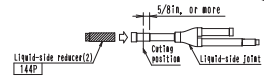
Pipe between the joint and the outside unit A and B (units : in.)

Outside unit capacity type	Pipe size (O.D)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REMQ72·96P	ø7/8	ø3/4	ø3/8
REMQ120P	ø1-1/8		ø1/2

When reducer is used

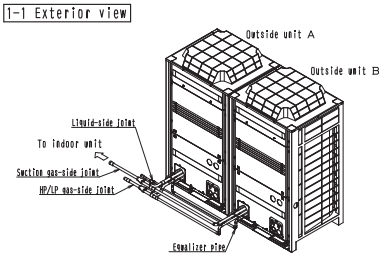
■ Suction gas-side reducer(3)
- Suction gas-side reducer(3) may be used on the Suction gas-side joint see the figure at the right for details of connection.

■ Liquid-side reducer(2)
- Liquid-side reducer(2) may be used on the Liquid-side joint see the figure at the right for details of connection.

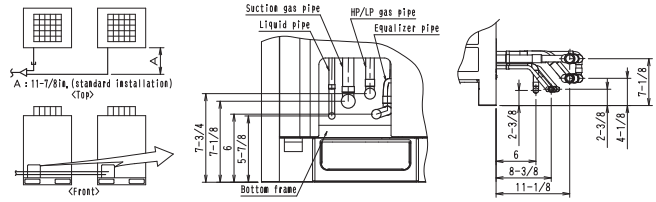


❶ Installation examples — Procedure for Front Connection

1-1 Exterior view



1-2 Finished dimensions
- For installations where the A dimensions exceed 11-7/8in. extend the field supply interconnecting pipe between the joint and the outside unit.



❷ Connection of suction gas-side and HP/LP gas-side pipe

2-1 Cutting the field supply Suction gas-side and HP/LP gas-side pipe
- Cut the Suction gas pipe or HP/LP gas pipe(field supply) according to Table 1, 2.

Caution
- This table shows where A dimension is 11-7/8in. or 1-2 finished dimensions. If its installation exceeds 11-7/8in, see Table 1 and 2 and adjust Suction gas pipe 1 and 2 and HP/LP gas pipe 1, 2, and 3.
- The L dimensions of the Suction gas pipe 1 and 2 in Table 1 and HP/LP gas pipe 1, 2, and 3 in Table 2 are applied to where B dimensions of elbows are shown as in Table 3 or Table 4. If B dimension is different from the dimensions in the table, see Table 1 and 2 and adjust them.

Note • Sizes described on below table 1~4 are only applied when unit capacity is A≥B

■ Table1

Model type	Suction gas pipe 1(field supply) L (in.)	Suction gas pipe 2(field supply) L (in.)
144·168P	2-3/8	9-1/4
192P	5-1/4	9-1/4

■ Table2

Model type	HP/LP gas pipe 1(field supply) L (in.)	HP/LP gas pipe 2(field supply) L (in.)	HP/LP gas pipe 3(field supply) L (in.)
144~192P	2	9-1/2	2-3/8

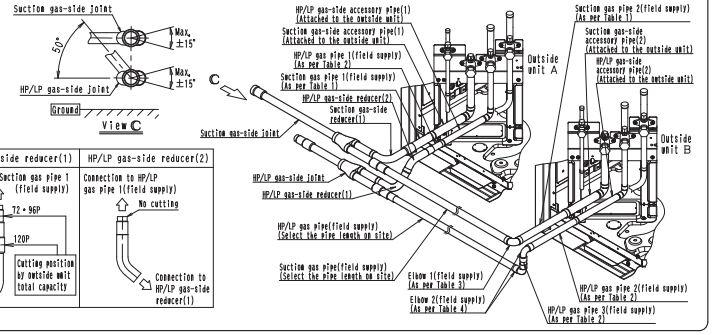
■ Table3

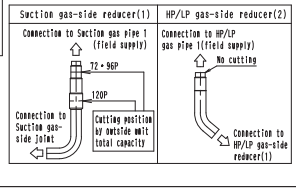
Model type	Elbow 1(field supply) B (in.)
144~192P	1

■ Table4

Model type	Elbow 2(field supply) B (in.)
144~192P	5/8

2-2 Connection of pipes
- Connect the Suction gas-side and HP/LP gas-side pipes as following the procedure on the below figure. (For connection of pipes, at first, connect Suction gas-side joint with Suction gas-side reducer (1) and HP/LP gas-side joint with HP/LP gas-side reducer (1) and (2).)
- See 1-2 finished dimensions for the location (height) of the joints.
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joints so that an attached face of the caution label keeps horizontal. (See the view C)
- Refer of both Cutting procedure for the cutting position of both joint and reducer.


Suction gas-side joint
50°
Max. ±15°
Max. ±15°
HP/LP gas-side joint
Ground
View C
C
HP/LP gas-side accessory pipe(1) (Attached to the outside unit)
Suction gas-side accessory pipe(1) (Attached to the outside unit)
HP/LP gas pipe 1(field supply) (As per Table 2)
Suction gas pipe 1(field supply) (As per Table 1)
HP/LP gas-side reducer(2)
Suction gas-side reducer(1)
Suction gas-side joint
HP/LP gas-side joint
HP/LP gas-side reducer(1)
HP/LP gas pipe(field supply) (Select the pipe length on site)
Suction gas pipe(field supply) (Select the pipe length on site)
Elbow 1(field supply) (As per Table 3)
Elbow 2(field supply) (As per Table 4)
Suction gas pipe 2(field supply) (As per Table 1)
Suction gas-side accessory pipe(2) (Attached to the outside unit)
HP/LP gas-side accessory pipe(2) (Attached to the outside unit)
Outside unit A
Outside unit B
HP/LP gas pipe 2(field supply) (As per Table 2)
HP/LP gas pipe 3(field supply) (As per Table 2)


Suction gas-side reducer(1)
HP/LP gas-side reducer(2)
Connection to Suction gas pipe 1 (field supply)
Connection to HP/LP gas pipe 1(field supply)
72·96P
120P
Connection to Suction gas-side joint
Cutting position by outside unit total capacity
No cutting
Connection to HP/LP gas-side reducer(1)

C: 1P218714

❸ Connection of Liquid-side and equalizer pipe

3-1 Cutting the field supply Liquid-side and equalizer pipe

- Cut the equalizer pipe(field supply) according to Table 1.

Caution • This table shows the case when the A dimensions shown in 1-2 Finished dimensions is 11-7/8in. If the A dimensions exceed 11-7/8in, see Table 1 and adjust the dimensions of the equalizer pipe 1 and 2.
• The L dimensions of the equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2. If the B dimension is not same with Table 2, see Table 1, and adjust them accordingly.

Note • Sizes described on below table 1 and 2 are only applied when unit capacity is A≧8

3-2 Connection of pipes

- Connect the liquid-side and equalizer pipes as shown in the right figure, (For connection of pipes, at first, connect Liquid-side joint with Liquid-side reducer (1).)
- See 1-2 Finished dimensions for the location (height) of the joint.
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Connect Liquid-side reducer (1) as at about 40° inclination and bend the field supplied liquid pipe up to the stop valve as following the procedure on right figure.
- Refer of both Cutting procedure for the cuting position of both joint and reducer.

Caution • If the liquid side reducer is connected horizontally without bending the liquid pipes, the insulation will not fit.

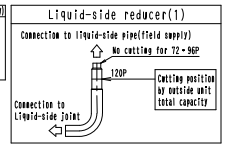
■ Table1

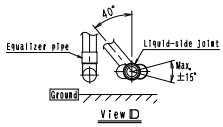
Equalizer pipe 1(field supply) L (in.)	Equalizer pipe 2(field supply) L (in.)
3-3/4	2-3/8

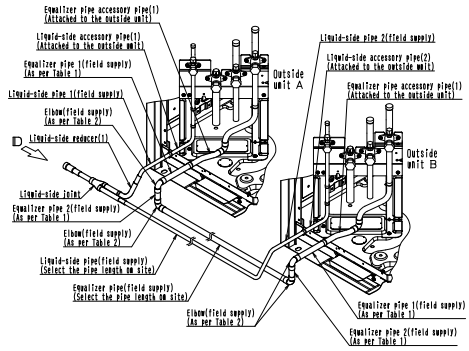
■ Table2

Elbow(field supply) B (in.)
5/8

Liquid-side reducer(1)


Connection to liquid-side pipe(field supply)
No cutting for 72 • 96P
120P
Cutting position by outside unit total capacity
Connection to Liquid-side joint



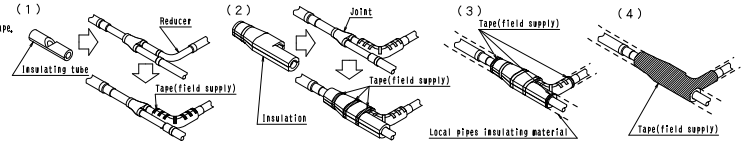

Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Liquid-side accessory pipe(1) (Attached to the outside unit)
Equalizer pipe 1(field supply) (As per Table 1)
Liquid-side pipe 1(field supply)
Elbow(field supply) (As per Table 2)
Liquid-side reducer(1)
Liquid-side joint
Equalizer pipe 2(field supply) (As per Table 1)
Elbow(field supply) (As per Table 2)
Liquid-side pipe(field supply) (Select the pipe length on site)
Equalizer pipe(field supply) (Select the pipe length on site)
Elbow(field supply) (As per Table 2)
Outside unit A
Liquid-side pipe 2(field supply)
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Outside unit B
Equalizer pipe 1(field supply) (As per Table 1)
Equalizer pipe 2(field supply) (As per Table 1)

❹ The work after the kit is connected

Connection of piping between the outside unit and the indoor unit
Air tight test
} Follow the instructions in the installation manual included with the outside unit, when performing installation work.

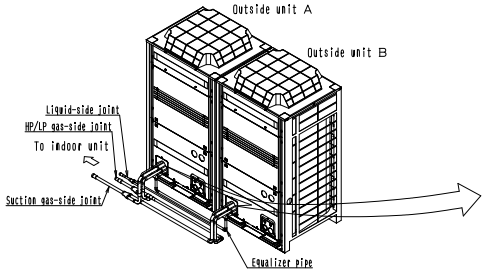
Insulation of joints

(1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces. (See the figure at the right.)
(3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4) Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)



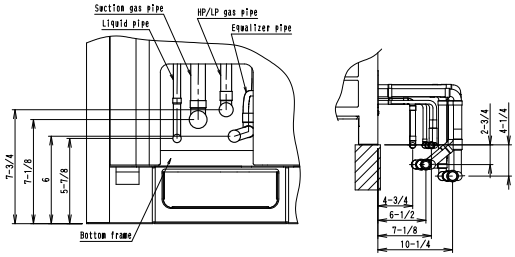
❶ Installation examples Procedure for Lower Front Connection

1-1 Exterior view



1-2 Finished dimensions

- A standard installation has the following dimensions.
- When the dimensions exceed the standard installation, extend the pipes between the outside unit and the joint(field supply).



❷ Connection of suction gas-side and HP/LP gas-side pipe

2-1 Cutting the field supply Suction gas-side and HP/LP gas-side pipe

- Cut the according to Table 1, 2.

Caution • The L dimensions of Suction gas pipe 1~4 in Table 1 and HP/LP gas pipe 1~5 in Table 2 show those when the field supply elbows have B dimension in Table 3 and Table 4. If the B dimension is not same with Table 3 and Table 4, see Table 1 and 2, and adjust them accordingly.

Note • Sizes described on below table 1~4 are only applied when unit capacity is A≧8

■ Table1

Model type	Suction gas pipe 1(field supply) L (in.)	Suction gas pipe 2(field supply) L (in.)	Suction gas pipe 3(field supply) L (in.)	Suction gas pipe 4(field supply) L (in.)
144•168P	8-1/2	7-1/4	4	9-5/8
192P	8-3/8	7-1/4	6-5/8	9-5/8

■ Table2

Model type	HP/LP gas pipe 1(field supply) L (in.)	HP/LP gas pipe 2(field supply) L (in.)	HP/LP gas pipe 3(field supply) L (in.)	HP/LP gas pipe 4(field supply) L (in.)	HP/LP gas pipe 5(field supply) L (in.)
144~192P	8-3/4	7-5/8	2-7/8	9-1/8	2-1/2

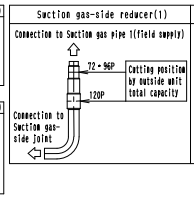
■ Table3

Model type	Elbow 1(field supply) B (in.)	Elbow 2(field supply) B (in.)
144•168P	1	1
192P	1	1

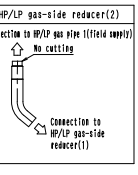
■ Table4

Model type	Elbow 3(field supply) B (in.)	Elbow 4(field supply) B (in.)
144~192P	5/8	5/8

Suction gas-side reducer(1)

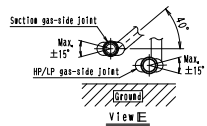

Connection to Suction gas pipe 1(field supply)
72 • 96P
120P
Cutting position by outside unit total capacity
Connection to Suction gas-side joint

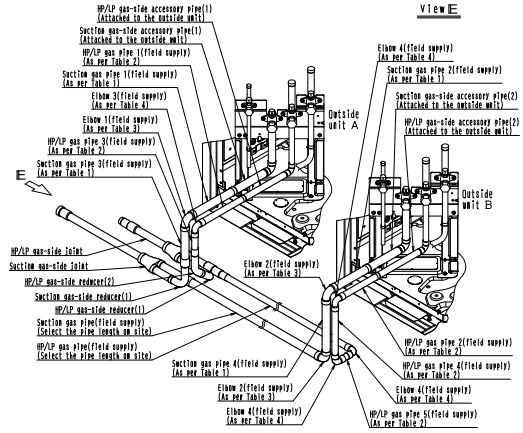
HP/LP gas-side reducer(2)



2-2 Connection of pipes

- Connect the suction gas-side and HP/LP gas-side pipes as shown in the below figure, (When connecting the pipes, first connect Suction gas-side joint and Suction gas-side reducer(1), HP/LP gas-side joint and HP/LP gas-side reducer(2).)
- See 1-2 Finished dimensions for the location(height) of the joints.
- See the caution section in the installation manual attached to the outdoor unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal(See the View E).
- Refer of both Cutting procedure for the cuting position of both joint and reducer.




HP/LP gas-side accessory pipe(1) (Attached to the outside unit)
Suction gas-side accessory pipe(1) (Attached to the outside unit)
HP/LP gas pipe 1(field supply) (As per Table 2)
Suction gas pipe 1(field supply) (As per Table 1)
Elbow 3(field supply) (As per Table 4)
Elbow 1(field supply) (As per Table 3)
HP/LP gas pipe 3(field supply) (As per Table 2)
Suction gas pipe 3(field supply) (As per Table 1)
E
HP/LP gas-side joint
Suction gas-side joint
HP/LP gas-side reducer(2)
Suction gas-side reducer(1)
HP/LP gas-side reducer(1)
Suction gas pipe(field supply) (Select the pipe length on site)
HP/LP gas pipe(field supply) (Select the pipe length on site)
Suction gas pipe 4(field supply) (As per Table 1)
Elbow 2(field supply) (As per Table 3)
Elbow 4(field supply) (As per Table 4)
Outside unit A
Elbow 4(field supply) (As per Table 4)
Suction gas pipe 2(field supply) (As per Table 1)
Suction gas-side accessory pipe(2) (Attached to the outside unit)
HP/LP gas-side accessory pipe(2) (Attached to the outside unit)
Outside unit B
Elbow 2(field supply) (As per Table 3)
HP/LP gas pipe 2(field supply) (As per Table 2)
HP/LP gas pipe 4(field supply) (As per Table 2)
Elbow 4(field supply) (As per Table 4)
HP/LP gas pipe 5(field supply) (As per Table 2)

continue to reverse side

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❸ Connection of Liquid-side and equalizer pipe

3-1 Cutting the field supply Liquid-side and equalizer pipe

- Cut the equalizer pipe(field supply) according to Table 1.

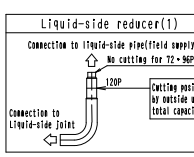
Caution
- This table shows the case when the A dimensions shown in 1-2 Finished dimensions is 11-7/8in.. If the A dimensions exceed 11-7/8in, see Table 1 and adjust the dimensions of Equalizer pipe 1 and 2.
- The L dimensions of Equalizer pipe 1 and 2 in Table 1 show those when the field supply elbows have B dimension in Table 2 shown in "procedure for front connection" and "connection of Liquid-side and equalizer pipe". If the B dimension is not same with Table, see Table 1 and 2, and adjust them accordingly.

Note
- Sizes described on below table 1 are only applied when unit capacity is A≥B

3-2 Connection of pipes

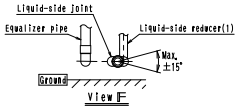
- Connect the liquid-side and equalizer pipe as shown in the right figure. (When connecting the pipes, first connect Liquid-side joint and Liquid side reducer(1).)
- See 1-2 Finished dimensions for the location(height) of the joint.
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joint in such a way that the attached face of the caution label becomes horizontal(See the View F).
- Connect the liquid side reducer(1) fitting approx. 90° and bend the field supplied liquid pipe up to the stop valve as shown in the figure below. (See the view F)
- Refer of both Cutting procedure for the cuting position of both joint and reducer.

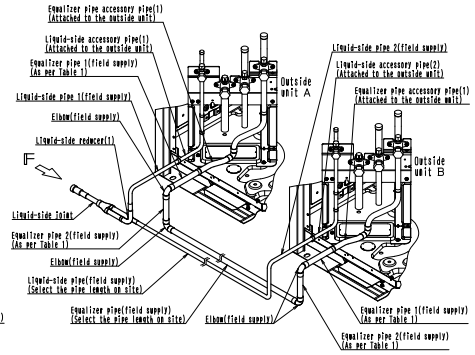
Caution
- If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.



■ Table 1

Equalizer pipe 1(field supply) L(in.)	Equalizer pipe 2(field supply) L(in.)
2-1/2	4-3/4




Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Liquid-side accessory pipe(1) (Attached to the outside unit)
Equalizer pipe 1(field supply) (As per Table 1)
Liquid-side pipe 1(field supply)
Elbow(field supply)
Liquid-side reducer(1)
F
Liquid-side joint
Equalizer pipe 2(field supply) (As per Table 1)
Elbow(field supply)
Liquid-side pipe(field supply) (Select the pipe length on site)
Equalizer pipe(field supply) (Select the pipe length on site)
Elbow(field supply)
Liquid-side pipe 2(field supply)
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Outside unit A
Outside unit B
Equalizer pipe 1(field supply) (As per Table 1)
Equalizer pipe 2(field supply) (As per Table 1)

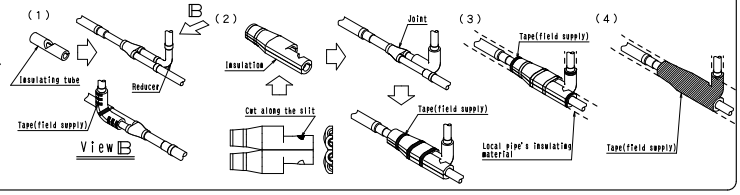
❹ The work after the kit is connected

Connection of piping between the outside unit and the indoor unit } Follow the instructions in the installation manual included with the outside unit, when performing installation work.

Air tight test

Insulation of joints

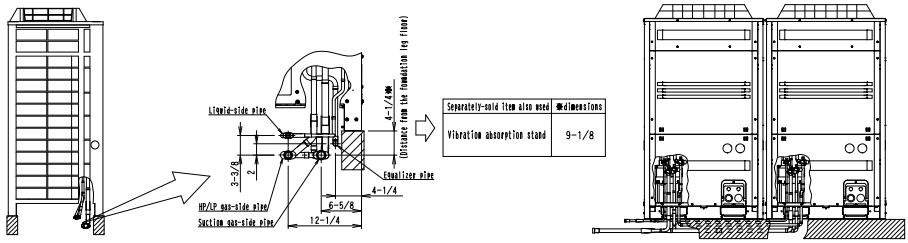
(1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2) Cut insulating tube along the slit. (See the figure at the right.) Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
(3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4) Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)



❶ Installation examples — Procedure for Bottom Connection

⚠Caution This installation is only possible if there is enough space to perform brazing and racking underneath the outside unit. If a centralized vibration proof base are used, the dimensions marked with "※" in the figure below will vary, so see the table below and determine the length of the field pipes.

1-1 Exterior view



Separately-sold item also used	※dimensions
Vibration absorption stand	9-1/8

❷ Connection of suction gas-side and HP/LP gas-side pipe

2-1 Cutting the field supply suction gas-side pipe and HP/LP gas-side pipe and the suction gas-side accessory pipe(2) attached to the outside unit

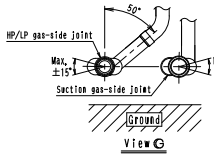
- Cut the pipes according to Table 1 or 2.

Caution
- The "L" dimensions of Suction gas pipe 1 in Table 1 and the HP/LP gas pipe 1~3 in Table 2 are identical to the "B" dimensions in Table 3 and Table 4, those of "field supply elbows" shown in " Procedure for Front Connection" and "Connection of suction gas-side and HP/LP gas-side pipe", which are equivalent to "straight size joint" with stopper. If the "B" dimensions are not identical to table or "straight size joint" is without sttoper, adjust them as Table 1 and Table 2 show.

Note
- Sizes described on below table 1and 2 are only applied when unit capacity is A≥B

■ Table 1 (For outside unit B Side)

Model type	Suction gas-side accessory pipe(2) (Attached to the outside unit) L(in.)	Cutting position	Suction gas pipe 1(field supply) L(in.)
144~192P	O (no cutting)		5-3/8



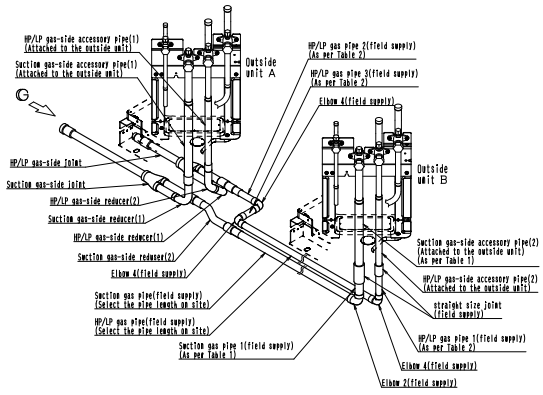
■ Table 2

Model type	HP/LP gas pipe 1(field supply) L(in.)	HP/LP gas pipe 2(field supply) L(in.)	HP/LP gas pipe 3(field supply) L(in.)
144~192P	6-1/8	4-1/8	3-5/8

Suction gas-side reducer(1)	HP/LP gas-side reducer(2)	Suction gas-side reducer(2)
Connection to Suction gas pipe 1 (field supply)	Connection to HP/LP gas pipe 1(field supply)	Connection to Suction gas pipe (field supply)
72・96P / 120P: Cutting position by outside unit total capacity	No cutting	72・96P / 120P: Cutting position by outside unit total capacity
Connection to Suction gas-side joint	Connection to HP/LP gas-side reducer(1)	Connection to Suction gas-side joint

2-2 Connection of pipes

- Remove the knockout plate on the bottom frame. (See the installation manual attached to the outdoor unit)
- Connect the suction gas-side and HP/LP gas-side pipe as shown in the figure below. (When connecting the pipes, first connect the suction gas-side joint and the suction gas-side reducer(1), the HP/LP gas-side joint and the HP/LP gas-side reducer (1))
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal. (See the view G)
- Connect HP/LP gas-side reducer(1) as at about, 50° inclination and connect HP/LP gas-side reducer(2). (See the view G)
- Refer of both Cutting procedure for the cuting position of both joint and reducer.


HP/LP gas-side accessory pipe(1) (Attached to the outside unit)
Suction gas-side accessory pipe(1) (Attached to the outside unit)
G
HP/LP gas-side joint
Suction gas-side joint
HP/LP gas-side reducer(2)
Suction gas-side reducer(1)
HP/LP gas-side reducer(1)
Suction gas-side reducer(2)
Elbow 4(field supply)
Suction gas pipe(field supply) (Select the pipe length on site)
HP/LP gas pipe(field supply) (Select the pipe length on site)
Suction gas pipe 1(field supply) (As per Table 1)
Outside unit A
HP/LP gas pipe 2(field supply) (As per Table 2)
HP/LP gas pipe 3(field supply) (As per Table 2)
Elbow 4(field supply)
Outside unit B
Suction gas-side accessory pipe(2) (Attached to the outside unit) (As per Table 1)
HP/LP gas-side accessory pipe(2) (Attached to the outside unit)
straight size joint (field supply)
HP/LP gas pipe 1(field supply) (As per Table 2)
Elbow 4(field supply)
Elbow 2(field supply)

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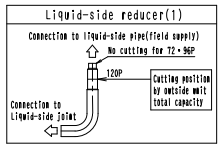
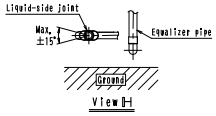
❸ Connection of Liquid-side and equalizer pipe

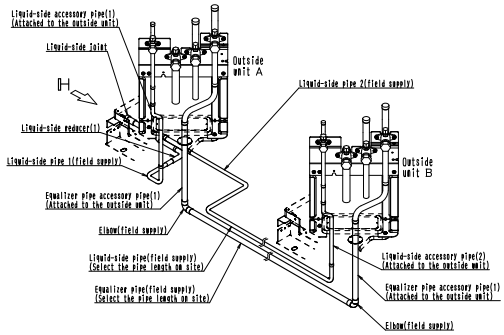
3-1 Connection of pipes

- Remove the knockout plate on the bottom frame. (See the Installation manual attached to the outside unit)
- Connect the liquid and equalizer pipes as shown in the figure below. (When connecting the pipes, first connect Liquid-side joint and Liquid-side reducer (1))
- See the caution section in the installation manual attached to the outside unit for brazing pipes.
- Install the joint so that an attached face of the caution label keeps horizontal. (See the view H)
- Bend the field supplied liquid pipe up to the stop valve as shown in the right figure. (See the view H)
- Refer of both Cutting procedure for the cutting position of both joint and reducer.

Caution • If the liquid side reducer is connected vertically without bending the liquid pipes, the insulation will not fit.






Liquid-side accessory pipe(1) (Attached to the outside unit)
Liquid-side joint
Outside unit A
H
Liquid-side pipe 2(field supply)
Liquid-side reducer(1)
Liquid-side pipe 1(field supply)
Outside unit B
Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Elbow(field supply)
Liquid-side pipe(field supply) (Select the pipe length on site)
Liquid-side accessory pipe(2) (Attached to the outside unit)
Equalizer pipe(field supply) (Select the pipe length on site)
Equalizer pipe accessory pipe(1) (Attached to the outside unit)
Elbow(field supply)

❹ The work after the kit is connected

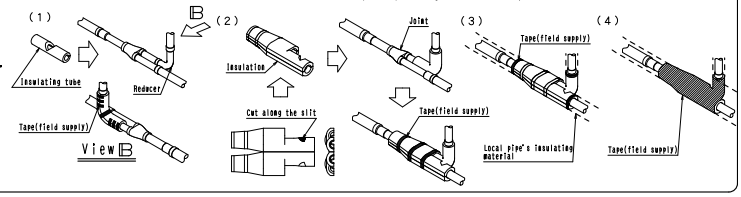
Connection of piping between the outside unit and the indoor unit

Air tight test

Follow the instructions in the installation manual included with the outside unit, when performing installation work.

Insulation of joints

(1) Fit the insulating tube to the reducer and temporarily keep it in place with tape.
(2) Cut insulating tube along the slit. (See the figure at the right.)
Fit the insulation to the joint and temporarily keep it in place with tape without leaving a gap between the insulation mating faces.
(3) Seal the seam between the insulation and the field supply piping insulation with the field supply tape.
(4) Wrap the tape around the insulation attached to the joint without leaving a gap. (▨ section shown in the figure at the right.)



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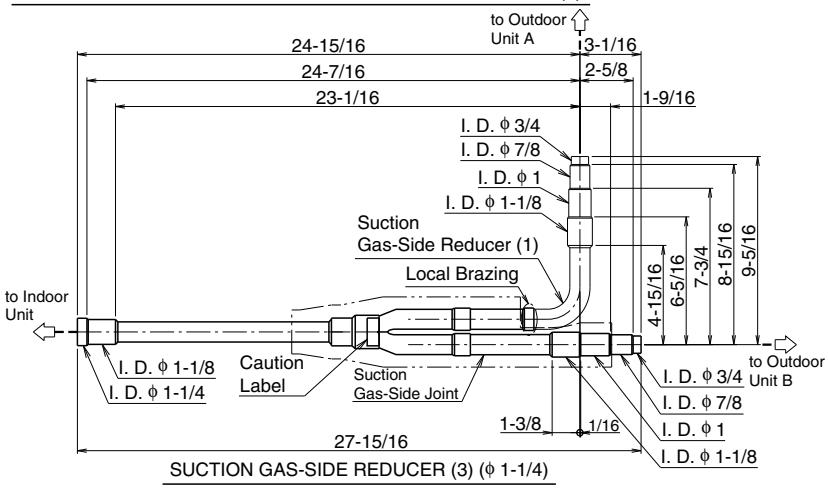
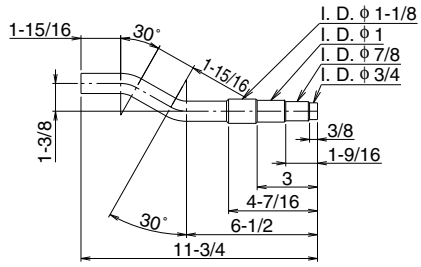
SUCTION GAS-SIDE JOINT + SUCTION GAS-SIDE REDUCER (1)

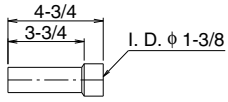


SUCTION GAS-SIDE REDUCER (2) (φ 1)



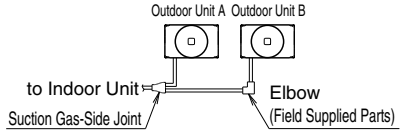
NOTE)
1. "- - - -" in the figure show field supply piping.
2. About size of connection pipe refer the "engineering data of VRV III R".
3. In case of install this kit observe follow conditions.
   · Do not tilt the joint more than ±15˚.
   Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
   · Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
   · Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

SUCTION GAS-SIDE REDUCER (3) (φ 1-1/4)

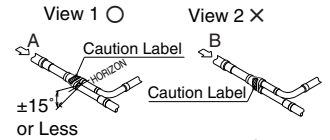


Accessory

SUCTION GAS-SIDE JOINT : 1
HP/LP GAS-SIDE JOINT : 1
LIQUID-SIDE JOINT : 1
SUCTION GAS-SIDE REDUCER (1) : 1
SUCTION GAS-SIDE REDUCER (2) : 1
SUCTION GAS-SIDE REDUCER (3) : 1
HP/LP GAS-SIDE REDUCER (1) : 1
HP/LP GAS-SIDE REDUCER (2) : 1
LIQUID-SIDE REDUCER (1) : 1
INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
INSTALLATION MANUAL



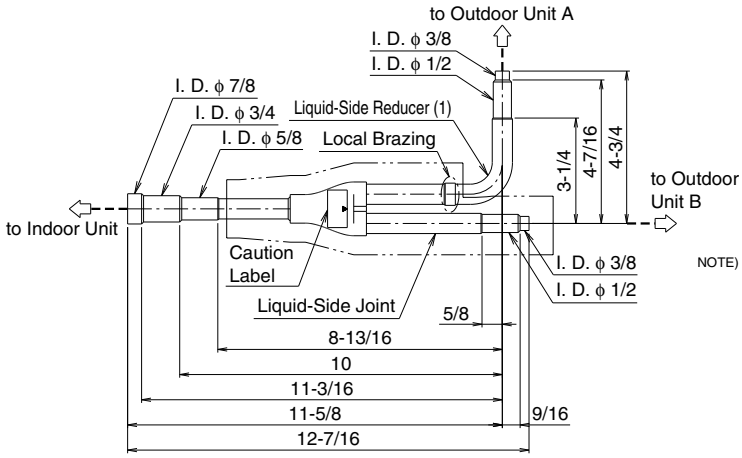
Layout Drawing (Upper-Side)

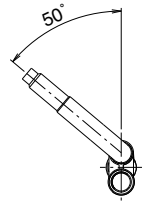


ARROW VIEW A ARROW VIEW B

3D060132

LIQUID-SIDE JOINT + LIQUID-SIDE REDUCER (1)

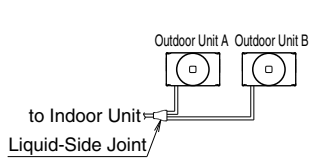




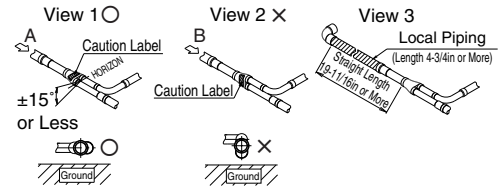
NOTE) 1. "- - - -" in the figure show field supply piping.
2. About size of connection pipe refer the "engineering data of VRV III R".
3. In case of install this kit observe follow conditions.
· Do not tilt the joint more than ±15˚.
Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
· Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
· Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range.
If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

Accessory

SUCTION GAS-SIDE JOINT : 1
HP/LP GAS-SIDE JOINT : 1
LIQUID-SIDE JOINT : 1
SUCTION GAS-SIDE REDUCER (1) : 1
SUCTION GAS-SIDE REDUCER (2) : 1
SUCTION GAS-SIDE REDUCER (3) : 1
HP/LP GAS-SIDE REDUCER (1) : 1
HP/LP GAS-SIDE REDUCER (2) : 1
LIQUID-SIDE REDUCER (1) : 1
INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
INSTALLATION MANUAL



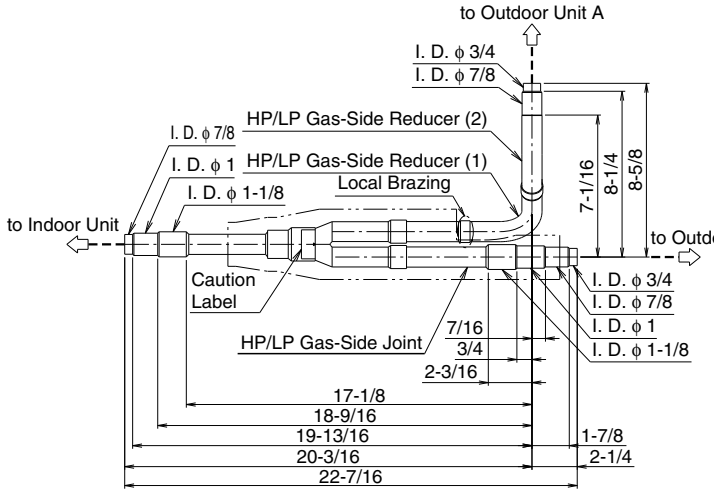
Layout Drawing (Upper-Side)

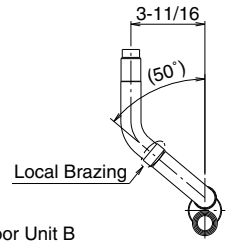


ARROW VIEW A ARROW VIEW B

3D060133

HP/LP GAS-SIDE JOINT + HP/LP GAS-SIDE REDUCER (1) (2)

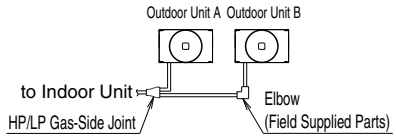




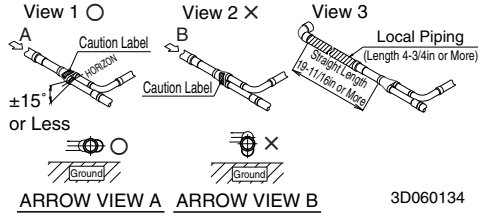
NOTE) 1. "- - - -" in the figure show field supply piping.
2. About size of connection pipe refer the "engineering data of VRV III R".
3. In case of install this kit observe follow conditions.
· Do not tilt the joint more than ±15°.
Install the joint horizontally so that the caution label attached to joint comes to the top. (See the view 1)
· Do not install the joint vertically why it may cause the malfunction of outdoor unit. (See the view 2)
· Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range.
If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured. (See the view 3)

Accessory

SUCTION GAS-SIDE JOINT : 1
HP/LP GAS-SIDE JOINT : 1
LIQUID-SIDE JOINT : 1
SUCTION GAS-SIDE REDUCER (1) : 1
SUCTION GAS-SIDE REDUCER (2) : 1
SUCTION GAS-SIDE REDUCER (3) : 1
HP/LP GAS-SIDE REDUCER (1) : 1
HP/LP GAS-SIDE REDUCER (2) : 1
LIQUID-SIDE REDUCER (1) : 1
INSULATION MATERIAL FOR SUCTION GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR HP/LP GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
INSTALLATION MANUAL



Layout Drawing (Upper-Side)

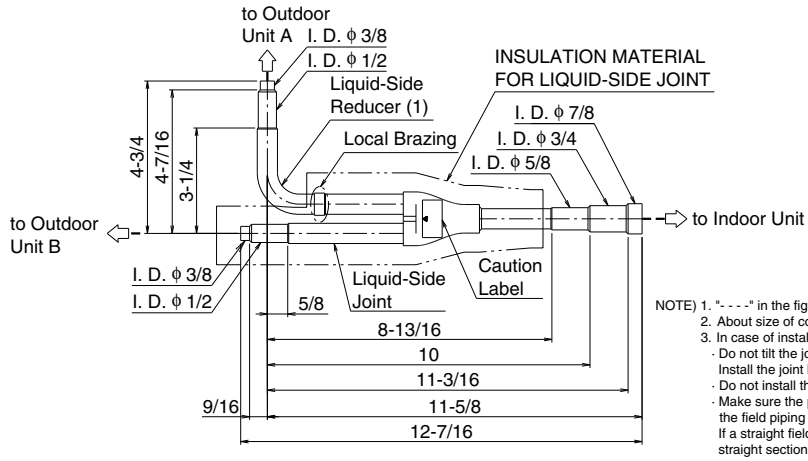


ARROW VIEW A ARROW VIEW B

3D060134

BHFP22P100U

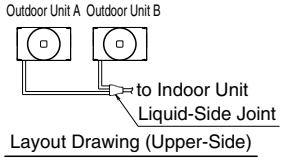
LIQUID-SIDE JOINT + LIQUID-SIDE REDUCER (1)



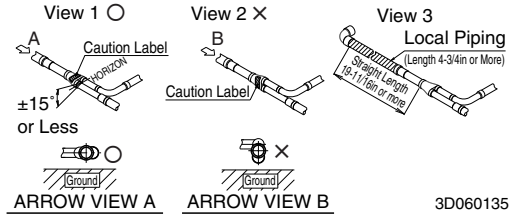
NOTE) 1. "- - - -" in the figure show field supply piping.
2. About size of connection pipe refer the "engineering data of VRV III".
3. In case of install this kit observe follow conditions.
· Do not tilt the joint more than ±15˚.
Install the joint horizontally so that the caution label attached to joint comes to the top.
· Do not install the joint vertically why it may cause the malfunction of outdoor unit.
· Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range.
If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured.

Accessory

GAS-SIDE JOINT : 1
LIQUID-SIDE JOINT : 1
GAS-SIDE REDUCER (1) : 1
GAS-SIDE REDUCER (2) : 1
GAS-SIDE REDUCER (3) : 1
GAS-SIDE REDUCER (7) : 1
GAS-SIDE REDUCER (9) : 1
LIQUID-SIDE REDUCER (1) : 1
LIQUID-SIDE REDUCER (3) : 1
LIQUID-SIDE REDUCER (5) : 1
INSULATION MATERIAL FOR GAS-SIDE JOINT : 1
INSULATION MATERIAL FOR LIQUID-SIDE JOINT : 1
INSULATION MATERIAL FOR GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
INSTALLATION MANUAL

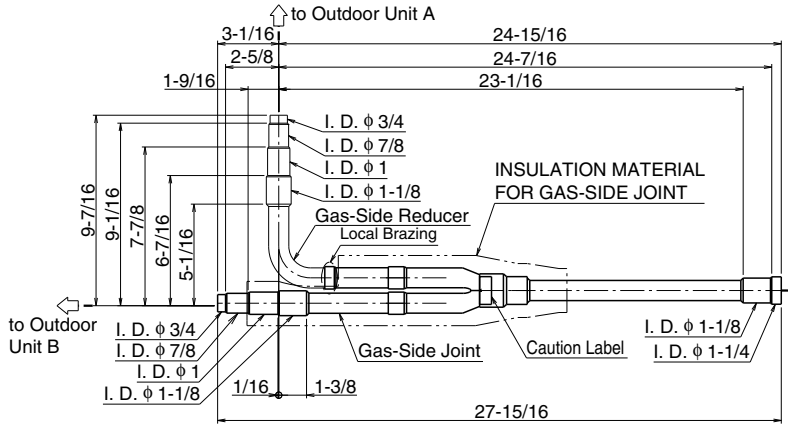


Layout Drawing (Upper-Side)



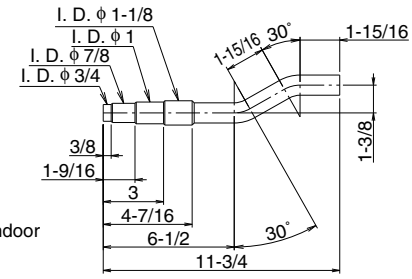
3D060135

GAS-SIDE JOINT + GAS-SIDE REDUCER (1)



GAS-SIDE REDUCER (2) (ϕ 1-1/4)

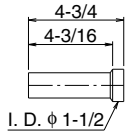
GAS-SIDE REDUCER (3) (ϕ 1)

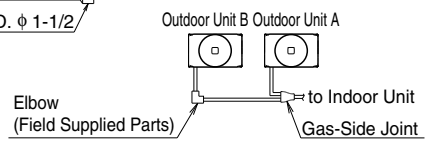


NOTE)
1. "- - - -" in the figure show field supply piping.
2. About size of connection pipe refer the "engineering data of VRV III".
3. In case of install this kit observe follow conditions.
· Do not tilt the joint more than ±15˚.
Install the joint horizontally so that the caution label attached to joint comes to the top.
· Do not install the joint vertically why it may cause the malfunction of outdoor unit.
· Make sure the piping up to the joint is straight for more than 19-11/16in. Do not bend the field piping within this range. If a straight field piping more than 4-3/4in is connected, more than 19-11/16in of straight section can be ensured.

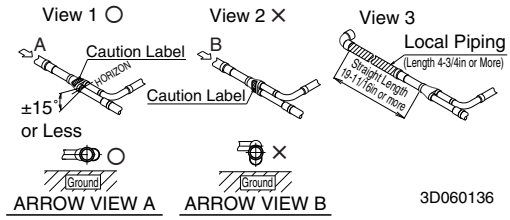
Accessory

GAS-SIDE JOINT : 1
LIQUID-SIDE JOINT : 1
GAS-SIDE REDUCER (1) : 1
GAS-SIDE REDUCER (2) : 1
GAS-SIDE REDUCER (3) : 1
GAS-SIDE REDUCER (7) : 1
GAS-SIDE REDUCER (9) : 1
LIQUID-SIDE REDUCER (1) : 1
LIQUID-SIDE REDUCER (3) : 1
LIQUID-SIDE REDUCER (5) : 1
INSULATION MATERIAL FOR GAS-SIDE JOINT : 1
INSULATION MATERIAL FOR LIQUID-SIDE JOINT : 1
INSULATION MATERIAL FOR GAS-SIDE PIPE : 1
INSULATION MATERIAL FOR LIQUID-SIDE PIPE : 1
INSTALLATION MANUAL





Layout Drawing (Upper-Side)



3D060136

5. Installation

5.1 RXYQ72~196PAYD / RXYQ216~240PYDNR (Heat Pump, 460V)
RXYQ72~196PATJ / RXYQ216~240PTJUR (Heat Pump, 208-230V)

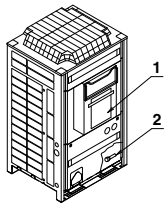


figure 1

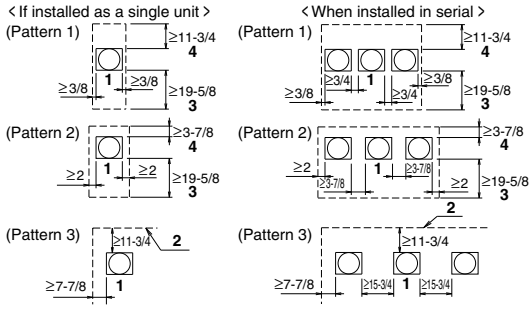


figure 2

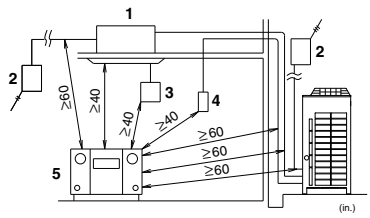


figure 3

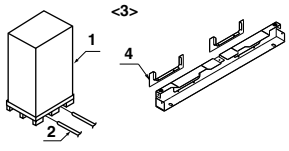


figure 4

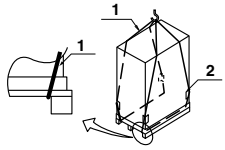


figure 5

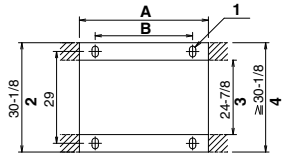


figure 7

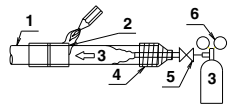


figure 8

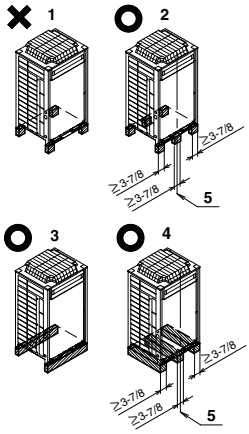


figure 6

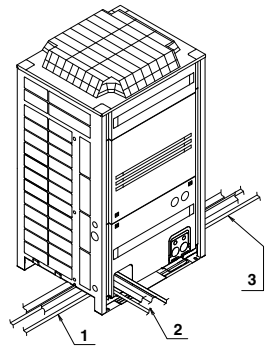


figure 9

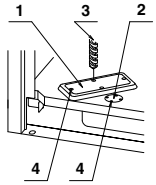


figure 10

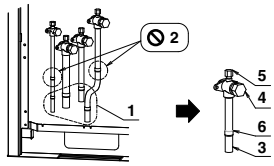


figure 11

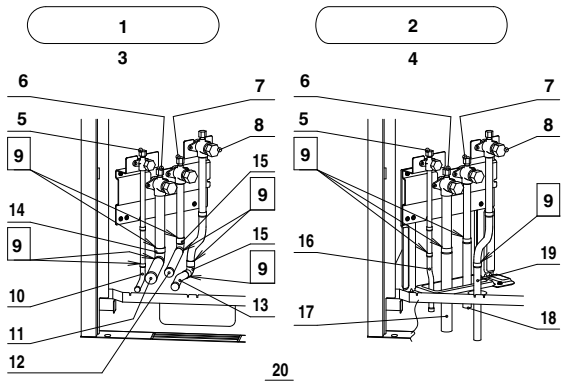


figure 12-1

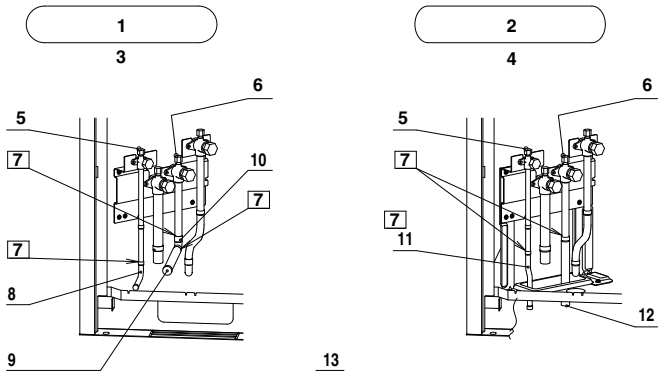


figure 12-2

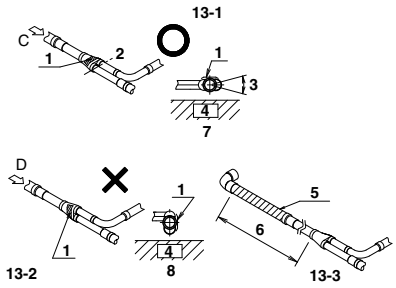


figure 13

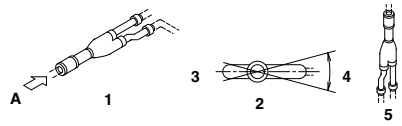


figure 14

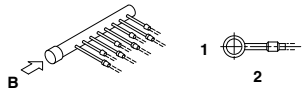


figure 15

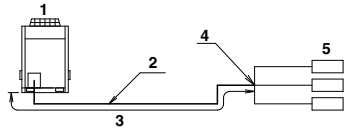


figure 16

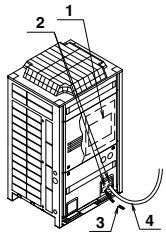


figure 18-1

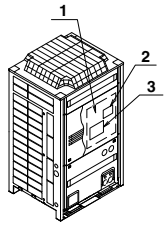


figure 18-2

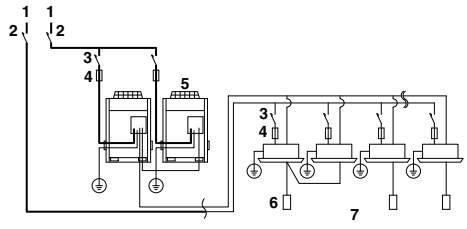
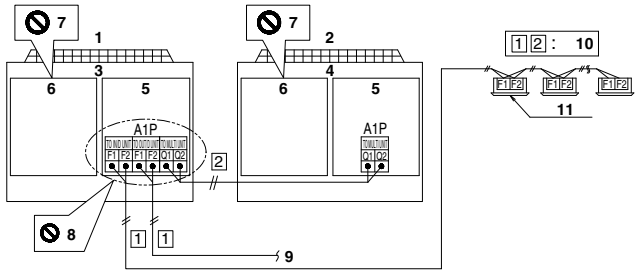


figure 17



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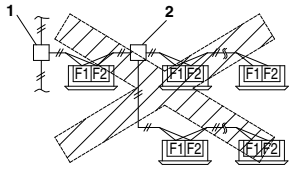

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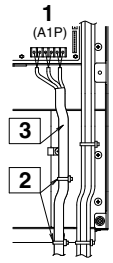

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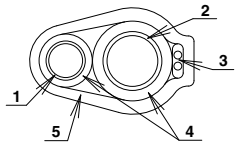

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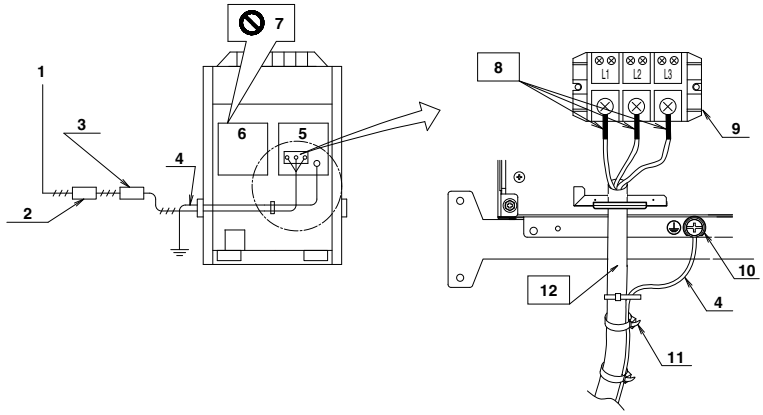

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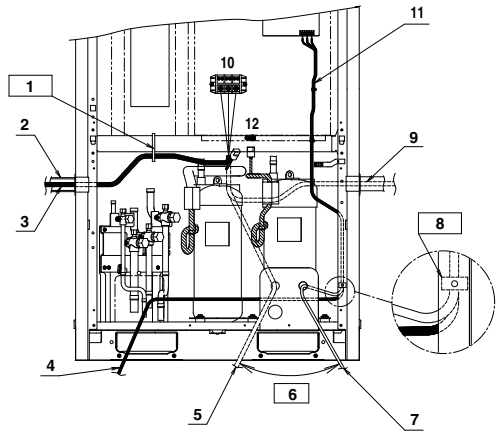

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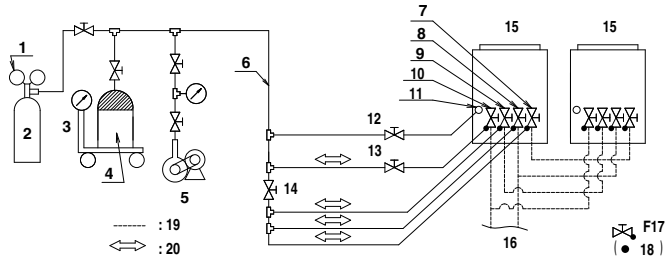

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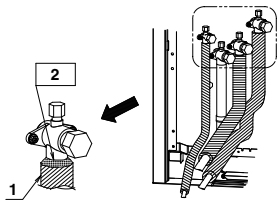

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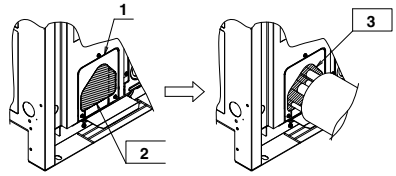

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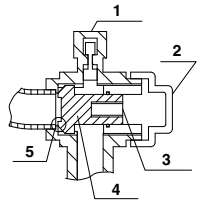

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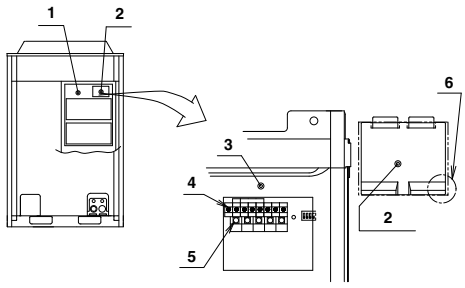

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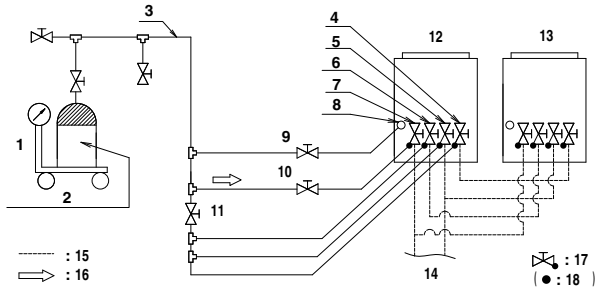

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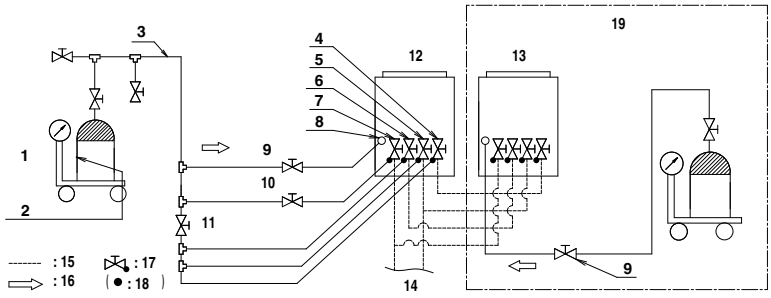

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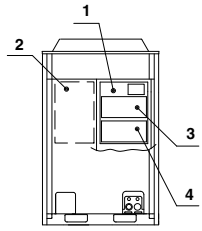


figure 32

1. FIRST OF ALL

- This document is an installation manual for the Daikin RXYQ-PA Series VRV Inverter. Before installing the unit, read this manual thoroughly, following the instructions contained in it.
  After installation, do a test run to make sure the unit runs properly, and then explain how to operate and take care of the unit to the customer, using the operation manual.
  Lastly, make sure the customer keeps this manual, along with the operation manual, in a safe place.

2. Safety considerations

Read these "SAFETY CONSIDERATIONS for Installation" carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation. Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
It may also be used to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**
- **When wiring, position the wires so that the terminal box lid can be securely fastened. Improper positioning of the terminal box lid may result in electric shocks, fire, or the terminals overheating.**
- **Before touching electrical parts, turn off the unit.**
- **Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.**
- **Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.**
- **When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**
- **Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.**

⚠ CAUTION

- **Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.**
- **Do not allow children to play on or around the unit to prevent injury.**
- **Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.**
- **Heat exchanger fins are sharp enough to cut.
  To avoid injury wear glove or cover the fins when working around them.**
- **Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.**
- **Insulate piping to prevent condensation.**
- **Be careful when transporting the product.**
- **Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.**

- **Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.**
- **Refrigerant R-410A in the system must be kept clean, dry, and tight.**
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping and follow the procedures.
- **Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.**
- **The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.**
- **Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.**
- **Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.**
- **Do not install the air conditioner in the following locations:**
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves.
  Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled.
  Operating the unit in such conditions can cause a fire.
- **Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.**

⚠ NOTE

- **Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.**
- **Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.**
- **If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.**
- **This air conditioner is an appliance that should not be accessible to the general public.**
- **The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

2-1 Special notice of product

[CLASSIFICATION]
This air conditioner comes under the term "appliances not accessible to the general public".

[REFRIGERANT]
VRVIII System use R410A refrigerant.

- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.
  Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.
  A. Clean and dry
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
  B. Tight
  Take care to keep the system tight when installing.
  R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation.
  R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.

[DESIGN PRESSURE]
Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

2-2 Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

3. INTRODUCTION

- RXYQ-PA series are designed for outdoor installation and used for cooling and heating applications.
- The indoor units that combined with RXYQ-PA system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

3-1 Combination

The system name and that independent units are as follows.

⟨The system name⟩	⟨Independent units⟩	
RXYQ72PAYD/PATJ	RXYQ72PAYD/PATJ	
RXYQ96PAYD/PATJ	RXYQ96PAYD/PATJ	
RXYQ108PAYD/PATJ	RXYQ108PAYD/PATJ	
RXYQ144PAYD/PATJ	RXYQ72PAYD/PATJ	RXYQ72PAYD/PATJ
RXYQ168PAYD/PATJ	RXYQ72PAYD/PATJ	RXYQ96PAYD/PATJ
RXYQ192PAYD/PATJ	RXYQ96PAYD/PATJ	RXYQ96PAYD/PATJ
RXYQ216PYDNR/PTJUR	RXYQ96PAYD/PATJ	RXYQ120PAYD/PATJ
RXYQ240PYDNR/PTJUR	RXYQ120PYDNR/PTJUR	RXYQ120PYDNR/PTJUR

- The indoor units can be installed in the following range.

⟨Outside unit⟩	⟨Total capacity index of indoor units⟩
RXYQ72PAYD/PATJ	43 ~ 93.5
RXYQ96PAYD/PATJ	57.5 ~ 124.5
RXYQ108PAYD/PATJ	64.5 ~ 140
RXYQ144PAYD/PATJ	86 ~ 187
RXYQ168PAYD/PATJ	100.5 ~ 218
RXYQ192PAYD/PATJ	115 ~ 249.5
RXYQ216PYDNR/PTJUR	108 ~ 280.5
RXYQ240PYDNR/PTJUR	120 ~ 312

- For installing the 2 units multi system, Outside unit multi connection piping kit "BHFP22P100U" are required.
- If the total capacity of the connected indoor units exceeds the capacity of the outside unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.

3-2 Standard supplied accessories

Confirm the following accessories are included. The storage location of the accessories are shown in figure 1.

NOTE

Do not throw away any of the accessories until installation is complete. They are needed for installation work.

Name	Clamp(1)	Clamp(2)	Clamp(3)	Vinyl tube	Conduit mounting plate		Manuals, etc.
Quantity	8 pcs.	2 pcs.	1 pc.	4 pcs.	2 pcs.	2 pcs.	1 pc. about each item
Shape	(Small)		(Large)				· Operation manual · Installation manual · "REQUEST FOR THE INDICATON" label (Installation records) · Additional REF charge label

Name		Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Gas side accessory pipe (1)				Gas side accessory pipe (2)	
Quantity	72PA type	1 pc.	1 pc.	1 pc.					
	96PA type				1 pc.			1 pc.	
	108PA type					1 pc.	1 pc.		1 pc.
Shape				f3/4	f7/8	f1	f1-1/8	f7/8	f1

Name		High side equalizer accessory pipe (1)	High side equalizer accessory pipe (2)	Low side equalizer accessory pipe (1)	Low side equalizer accessory pipe (2)	L type accessory joint (1)	L type accessory joint (2)
Quantity	72PA type	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	2 pcs.
	96PA type						
	108PA type						
Shape			f3/4	O.D f1	I.D f1	f1	f3/4

(Refer to figure 1)

1. Clamps, Manuals, etc.
2. Accessory pipes

3-3 Option accessory

To install the outside units, the following optional parts are also required. To select an optimum kit, refer to "**6. REFRIGERANT PIPING**".

- **Outside unit multi connection piping kit**

Number of outside units connected	2 units
Kit name	BHFP22P100U

- **Refrigerant branching kit**

REFNET header	KHRP26M22H	KHRP26M33H	KHRP26M72H	KHRP26M73HU
REFNET joint	KHRP26A22T	KHRP26A33T	KHRP26M72TU	KHRP26M73TU

Make sure that any separately purchased accessories are designed for use with R410A.

3-4 Technical and Electrical specifications

Refer to the Engineering Data Book for the complete list of specifications.

3-5 Main components

For main components and function of the main components, refer to the Engineering Data Book.

4. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outside unit and the indoor unit may not exceed the allowable piping length.
   (Refer to **"6. REFRIGERANT PIPING"**)
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.
   Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.
   If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.
   (See the **"Installation Space Examples"** for the minimum space requirements.)

Installation Space Examples

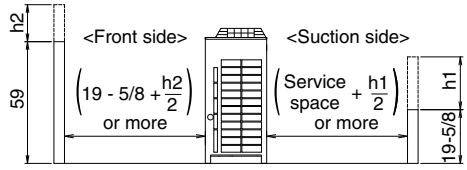
- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F.
  If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outside unit, take an even larger space on the air intake than is shown in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

(Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.
- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



DANGER

- **Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.**
- **Refrigerant gas in heavier air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
  Refer to the chapter "CAUTION FOR REFRIGERANT LEAKS".

NOTE

1. An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, etc.
   Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

(Refer to figure 3)
1. Indoor unit
2. Branch switch, ground leakage circuit breaker
3. Remote controller
4. COOL/HEAT selector
5. Personal computer or radio

2. When installing in locations where there is heavy snowfall, implement the following snow measures.
   - Ensure the base is high enough that intakes are not clogged by snow.
   - Remove the rear intake grille to prevent snow from accumulating on the fins.

5. INSPECTING AND HANDLING THE UNIT

- At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.
- When handling the unit, take into account the following :

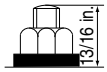
1. Fragile, handle the unit with care.
   Keep the unit upright in order to avoid compressor damage.
2. Decide on the transportation route.
3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. **(Refer to figure 4)**
4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
   - Use a sling sufficiently strong to hold the mass of the unit.
   - Use 2 belts of at least 27 ft long.
   - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
   - Hoist the unit making sure it is being lifted at its center of gravity.
5. After installation, remove the transportation brackets (yellow) attached to the large openings. **(Refer to figure 4)**

(Refer to figure 4)
1. Packaging material
2. Forklift
3. Removal of shipping brackets
4. Shipping bracket (Remove the brackets by pushing the hook.)

(Refer to figure 5)
1. Belt sling
2. Wear plate

6. PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. **(Refer to figure 6)**
- The base should support the unit with the extent larger than hatched area in figure 7.
  If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- Secure the unit to its base using foundation bolts. (Use four commercially available M12-type foundation bolts, nuts, and washers.)
- The foundation bolts should be inserted 13/16 in..

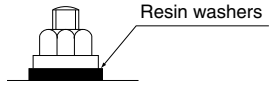


(Refer to figure 6)
1. Independent base (four corner type)
2. Independent base (with center support type)
3. Beam base (Horizontal)
4. Beam base (Vertical)
5. Center of the product

(Refer to figure 7)
1. Foundation bolt point (ϕ9/16 in. dia, : 4positions)
2. (Depth of product)
3. (Inner dimension of the base)
4. (Outer dimension of the base)

Model	A (in.)	B (in.)
72 · 96 · 108PA type	48-13/16	43-3/8

- There are restrictions on the refrigerant pipe connecting order between outside unit in the case of the multi system.
  See "**2-1 Combination**" for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation.
  Drain water is sometimes discharged from the outside unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.



7. REFRIGERANT PIPING

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until **"7. FIELD WIRING"** and **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux.
  (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

7-1 Selection of piping material and Refrigerant branching kit

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 9 mg/10 ft or less.)
- Use the following items for the refrigerant piping.
  Material : Jointless phosphor-deoxidized copper pipe
  Size : See **"6-5 Example of connection"** to determine the correct size.
  Thickness : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the "**6-5 Example of connection**".
- Outside unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outside units (in case of multi system) and piping branches.
  Use only separately sold items selected specifically according to the outside unit multi connection piping kit, the refrigerant branching kit selection in the "**6-5 Example of connection**".

7-2 Protection against contamination when installing pipes

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

Place	Installation period	Protection method
Outdoor	More than a month	Pinch the pipe
	Less than a month	Pinch or tape the pipe
Indoor	Regardless of the period	

NOTE

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

7-3 Pipe connection

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. **(Refer to figure 8)**
  Brazing without performing nitrogen permutation or nitrogen blow into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.

  (Refer to figure 8)
  1. Refrigerant pipe
  2. Location to be brazed
  3. Nitrogen
  4. Taping
  5. Handy valve
  6. Regulator
- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

⚠ NOTE

Do not use anti-oxidants when brazing the pipe joints.
Residue can clog pipes and break equipment.

7-4 Connecting the refrigerant piping

1. Direction to bring out the pipes
The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knock hole in the bottom frame.

(Refer to figure 9)
1. Left-side connection
2. Front connection
3. Right-side connection

Precautions when knocking out knock holes

- Open knock hole (large, small) in the base frame by drilling the 4 concave around it with a ϕ1/4"-bit. **(Refer to figure 10)**

  (Refer to figure 10)
  1. Knock hole (large : for liquid pipe, gas pipe and low side equalizer pipe)
  2. Knock hole (small : for high side equalizer pipe)
  3. Drill
  4. Concave section (4 points)
- Be sure to avoid damaging the casing.
- After knocking out the holes, we recommend you to remove any burrs and paint them using the repair paint to prevent rusting.
- When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.

2. Removing Pinch Piping
- When connecting refrigerant piping to an outside unit, remove the pinch piping using the procedure in the figure 11.
  (Refer to figure 11)
- About handling of shutoff valves, refer to [Shutoff valve operation procedure] in **"11-1 Before working"**.

⚠ CAUTION

After removing the gass, remove the pinch piping.
Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

(Refer to figure 11)
1. Pich piping (4 pieces)
2. Do not remove the relay piping.
3. Pinch piping
4. Procedure 1 : Confirm the shutoff valve is closed.
5. Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
6. Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.

3. Connecting refrigerant piping to outside units
- Figure 12-1, 2 shows the example of connecting refrigerant piping to outside units.
- The local inter unit piping next accesorry pipes are field supplyed.
- About the detail of connecting pipes between outside units on outside unit multi system, refer to the "**4. Precautions when connecting piping between outside units**" and the installation manual attached to the outside unit multi connection piping kit.

  (Refer to figure 12-1)
  1. When connected to the front
  2. When connected at lateral side (bottom)
  3. Remove the shutoff valve cover to connect.
  4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
  5. Liquid pipe shutoff valve
  6. Low side equalizer pipe shutoff valve
  7. Gas pipe shutoff valve
  8. High side equalizer pipe shutoff valve
  9. Brazing
  10. Liquid side accessory pipe (1)
  11. Low side equalizer accessory pipe (1)
  12. Gas side accessory pipe (1)
  13. High side equalizer accessory pipe (1)
  14. L type accessory joint (1)
  15. L type accessory joint (2)
  16. Liquid side accessory pipe (2)
  17. Low side equalizer accessory pipe (2)
  18. Gas side accessory pipe (1)
  19. High side equalizer accessory pipe (2)
  20. Installation for multi system

  (Refer to figure 12-2)
  1. When connected to the front
  2. When connected at lateral side (bottom)
  3. Remove the shutoff valve cover to connect.
  4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
  5. Liquid pipe shutoff valve
  6. Gas pipe shutoff valve
  7. Brazing
  8. Liquid side accessory pipe (1)
  9. Gas side accessory pipe (1)
  10. L type accessory joint (2)
  11. Liquid side accessory pipe (2)
  12. Gas side accessory pipe (1)
  13. Installation for single unit system
- Equalizer pipe is only for connection between outside units on multi outside unit system.
  That does not connect to indoor units.
- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.

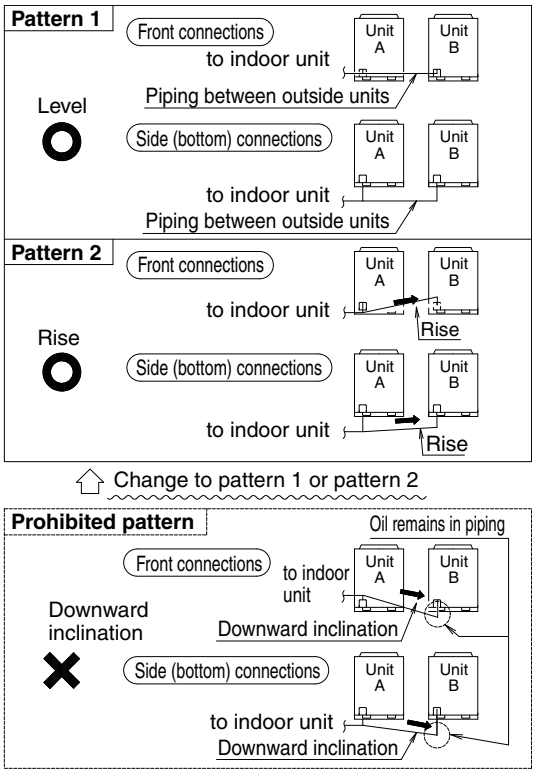
4. Precautions when connecting piping between outside units
The Outside unit multi connection piping kit (sold separately) is needed to connect piping between outside units in multi system. Only proceed with piping work after considering the limitations on installation listed here and in **"5. Branching the refrigerant piping"**, always referring to the kit's installation manual.
(1) About outside unit multi connection piping kit
- Install the joint horizontally so that the attached warning label faces strait up, and the tilt is within ±15°. **(Refer to figure 13-1)**
  Do not install vertically. **(Refer to figure 13-2)**

- Maintain a straight portion of 19-5/8 in. or more until the split of the joint without wrapping any onsite piping around this area.
  Over 19-5/8 in. of straight area can be maintained by connecting at least 4-3/4 in. of onsite pipe (straight) to the joint.
  (Refer to figure 13-3)

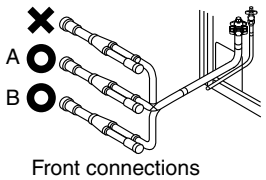
(Refer to figure 13)

1. Warning label
2. Horizontal surface
3. ±15° or less
4. Ground
5. Onsite pipe (4-3/4 in. length or more)
6. Straight part of 19-5/8 in. or more
7. C-arrow view
8. D-arrow view

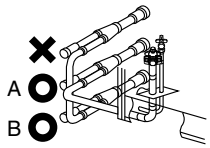
(2) The piping between outside units must be installed level (Pattern 1) or with a rise (Pattern 2). Otherwise oil may pool in the pipes.



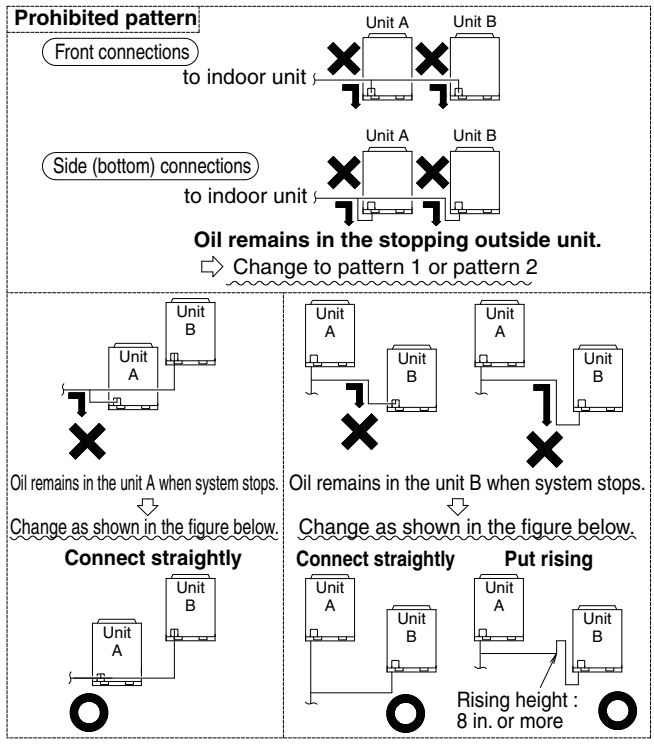
(3) To avoid the risk of oil detention in the stopping unit, always connect the shutoff valve and the piping between outside units as shown A or B in the figure below.



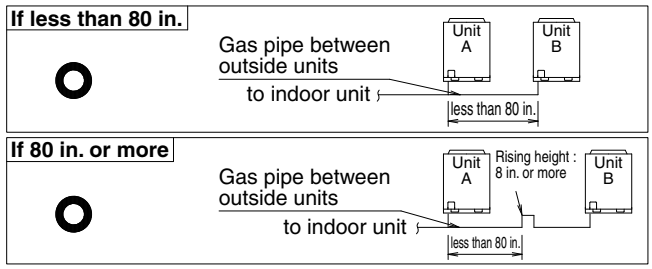
Front connections



Side (bottom) connections


Prohibited pattern
Front connections
to indoor unit
Unit A
Unit B
Side (bottom) connections
to indoor unit
Oil remains in the stopping outside unit.
Change to pattern 1 or pattern 2
Oil remains in the unit A when system stops.
Change as shown in the figure below.
Connect straightly
Oil remains in the unit B when system stops.
Change as shown in the figure below.
Connect straightly
Put rising
Rising height : 8 in. or more

(4) If the piping length between the outside units exceeds 80 in., create a rise of 8 in. or more in the gas piping under a length of 80 in. from the outside unit multi connection piping kit.


If less than 80 in.
Gas pipe between outside units
to indoor unit
Unit A
Unit B
less than 80 in.
If 80 in. or more
Gas pipe between outside units
to indoor unit
Rising height : 8 in. or more
less than 80 in.

5. Branching the refrigerant piping
Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit. (Improper installation could lead to malfunctioning or breakdown of the outside unit.)

<REFNET joint>
Install the REFNET joint so it splits horizontally or vertically.

(Refer to figure 14)

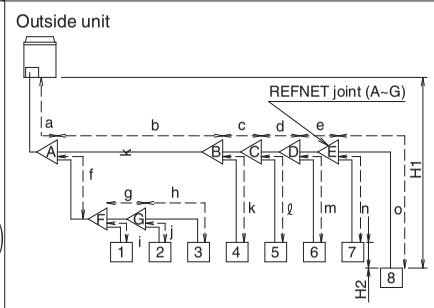
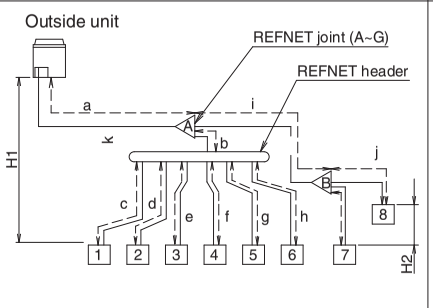
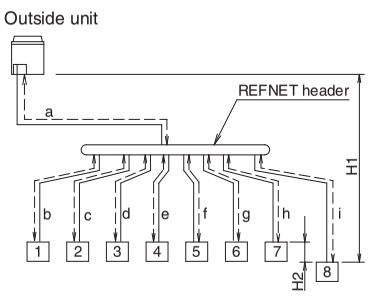
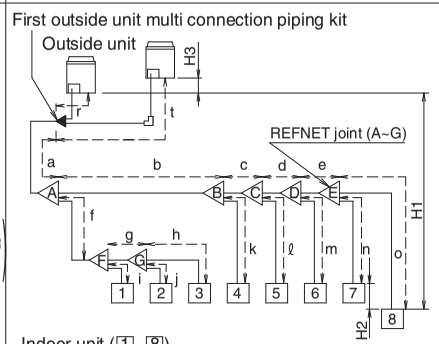
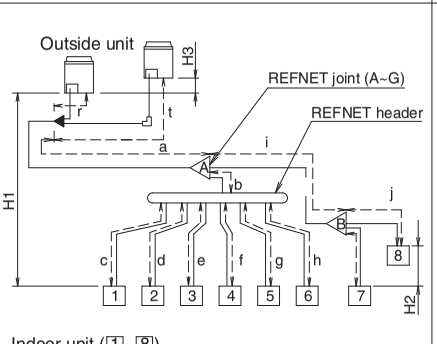
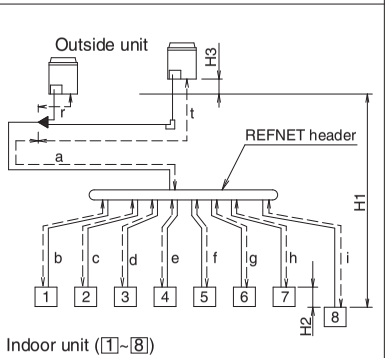
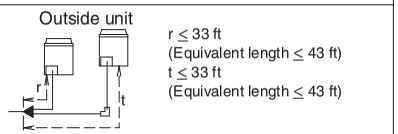
1. Horizontal
2. A-arrow view
3. Horizontal surface
4. ±30° or less
5. Vertical

<REFNET header>
Install the REFNET header so it splits horizontally.

(Refer to figure 15)

1. Horizontal surface
2. B-arrow view

7-5 Example of connection

Example of connection (Connection of 8 indoor units)			Branch with REFNET joint	Branch with REFNET joint and header	Branch with REFNET header
	Single outside system (RXYQ72~108PAYD / RXYQ72~108PATJ)				
	Multi outside system (RXYQ144~192PAYD / RXYQ216~240PYDNR / RXYQ144~192PATJ / RXYQ216~240PTJUR)				
Maximum allowable length	Between outside unit (*2) and indoor unit	Actual pipe length	Pipe length between outside unit (*2) and indoor unit ≤ 540 ft		
			Example 8 : a + b + c + d + e + o ≤ 540 ft	Example 6 : a + b + h ≤ 540 ft, 8 : a + i + j ≤ 540 ft	Example 8 : a + i ≤ 540 ft
		Equivalent length	Equivalent pipe length between outside unit (*2) and indoor unit ≤ 620 ft (*1) (Assume eqivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, for calculation purposes)		
		Total extention length	Total piping length from outside unit (*2) to all indoor unit ≤ 3280 ft		
	Between first outside unit multi connection piping kit and outside unit (in case of multi system)	Actual and Equivalent pipe length	Actual pipe length from first outside unit multi connection piping kit to outside unit ≤ 33 ft Equivalent pipe length from first outside unit multi connection piping kit to outside unit ≤ 43 ft		
Allowable height difference	Between outside and indoor units	Difference in height	Difference in height between outside unit and indoor unit (H1) ≤ 164 ft (*3)(Max 295 ft if the outside unit is below (*4)		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) ≤ 49 ft		
	Between outside and outside units	Difference in height	Difference in height between adjacent outside units (H3) ≤ 16 ft		
Allowable length after the branch		Actual pipe length	Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 130 ft (Note 2)		
			Example 8 : b + c + d + e + o ≤ 130 ft	Example 6 : b + h ≤ 130 ft, 8 : i + j ≤ 130 ft	Example 8 : i ≤ 130 ft

(*1) ⊣ Indicates the Outside unit multi-connection piping kit.
(*2) In case of multi outdoor system, re-read “outside unit” to “the first Outside unit multi connection piping kit” as seen from the indoor unit.
(*3) This can be extended to 295 ft with a replacement outdoor unit PCB.
(*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

Outside unit multi connection piping kit and Refrigerant branch kit selection

· Refrigerant branch kits can only be used with R410A.
· When multi outdoor system are installed, be sure to use the special separately sold Outside unit multi connection piping kit. (BHFP22P100U)
(For how to select the proper kit, follow the table at right.)
· Never use BHFP26M90U, BHFP22M90U for M type of this series or T joint (field supplyed).

How to select the REFNET joint

When using REFNET joint at the first branch counted from the outside unit side, choose from the following table in accordance with the outside unit capacity type.
(Example :REFNET jointA)

Outside unit capacity type	Refrigerant branch kit name
RXYQ72 · 96PA type	KHRP26A33T
RXYQ120 ~ 216PA type	KHRP26M72TU
RXYQ240PA type	KHRP26M73TU

- Choose the REFNET joints other than the first branch from the following table in a accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	KHRP26A22T
72 ≤ x < 111	KHRP26A33T
111 ≤ x	KHRP26M72TU
162 ≤ x	KHRP26M73TU

How to select the REFNET header

- Choose form the following table in accordance with the total capacity index of all the indoor units conncted below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name
x < 72	KHRP26M22H or KHRP26M33H
72 ≤ x < 111	KHRP26M33H
111 ≤ x	KHRP26M72H
162 ≤ x	KHRP26M73TU

How to select the outside unit multi connection piping kit
(This is required when the system is multi outside unit system.)

- Choose from the following table in accordance with the number of outside units.

Number of outside unit	Connecting piping kit name
2 units	BHFP22P100U

Example for indoor units connected downstream

Example REFNET joint C : Indoor units 5+6+7+8

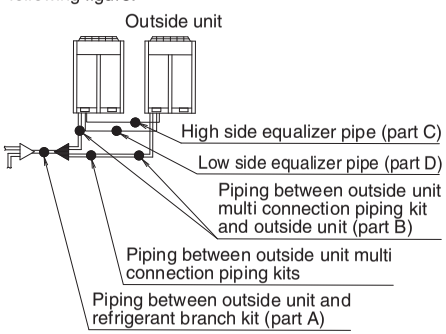
Example REFNET joint B : Indoor units 7+8
Example REFNET header : Indoor units 1+2+3+4+5+6

Example REFNET header : indoor units 1+2+3+4+5+6+7+8

Pipe size selection

⚠ The thickness and material shall be selected in accordance with local code.

For an outside unit installation, make the settings in accordance with the following figure.


Outside unit
High side equalizer pipe (part C)
Low side equalizer pipe (part D)
Piping between outside unit multi connection piping kit and outside unit (part B)
Piping between outside unit multi connection piping kits
Piping between outside unit and refrigerant branch kit (part A)

Piping between outside unit(*2) and refrigerant branch kit (partA)

- Choose from the following table in accordance with the outside units system capacity type.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
RXYQ72PA	ϕ3/4	ϕ3/8
RXYQ96PA	ϕ7/8	
RXYQ108PA	ϕ1-1/8	ϕ1/2
RXYQ144PA		
RXYQ168PA		ϕ5/8
RXYQ192PA~216PR		
RXYQ240PR	ϕ1-3/8	

Piping between outside unit multi connection piping kit and outside unit (part B)

- Choose from the following table in accordance with the capacity type of the outside unit connected.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
RXYQ72PA RXYQ96PA	ϕ3/4 ϕ7/8	ϕ3/8
RXYQ108PA RXYQ120PR	ϕ1-1/8	ϕ1/2

Piping between refrigerant branch kits

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

*1 Connection piping must not exceed the refrigerant Piping size between outside unit and refrigerant branch kit (part A)

(unit : in.)

Indoor capacity index	Piping size (O. D.)	
	Gas pipe	Liquid pipe
x < 54	ϕ5/8	ϕ3/8
54 ≤ x < 72	ϕ3/4	
72 ≤ x < 111	ϕ7/8	
111 ≤ x < 162	ϕ1-1/8	ϕ1/2
162 ≤ x		ϕ5/8

Piping between refrigerant branch kit and indoor unit.

- Match to the size of the connection pipng on the indoor unit. (unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	Gas pipe	Liquid pipe
07 · 09 · 12 · 18	ϕ1/2	ϕ1/4
24 · 30 · 36 · 48	ϕ5/8	ϕ3/8

High side Equalizer pipe (part C)(outside multi system only) (unit : in.)

Piping size (O. D.)	ϕ3/4

Low side Equalizer pipe (part D)(outside multi system only) (unit : in.)

Piping size (O. D.)	ϕ3/4

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged : R(lb)
(R should be rounded off in units of 0.1 lb.)

$$R = \left(\begin{array}{l} (\text{Total length (ft) of liquid piping size at } \phi 7/8) \times 0.249 + (\text{Total length (ft) of liquid piping size at } \phi 3/4) \times 0.175 \\ + (\text{Total length (ft) of liquid piping size at } \phi 5/8) \times 0.121 + (\text{Total length (ft) of liquid piping size at } \phi 1/2) \times 0.081 \\ + (\text{Total length (ft) of liquid piping size at } \phi 3/8) \times 0.040 + (\text{Total length (ft) of liquid piping size at } \phi 1/4) \times 0.015 \end{array} \right) + \text{HEAT PUMP SYSTEM} + \text{REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT}$$

HEAT PUMP SYSTEM	
MODEL NAME	THE AMOUNT OF REFRIGERANT
RXYQ72 ~ 120PAYD	—
	—
RXYQ144 ~ 192PAYD	2.2 lb
RXYQ216 ~ 1240PATJ	3.3 lb

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
INDOOR CONNECTION CAPACITY	MODEL NAME
	RXYQ72 ~ 240PAYD
	RXYQ72 ~ 240PATJ
MORE THAN 100% 120% OR LESS	1.1 lb
MORE THAN 120% 130% OR LESS	1.1 lb

Example for refrigerant branch using REFNET joint and REFNET heder for systems and each pipe length as shown below.

Outside system : RXYQ240PAYD
Total capacity of indoor unit : 116%

a : ϕ3/4 × 15ft.	e : ϕ3/8 × 5ft.	i : ϕ3/8 × 5ft.	m : ϕ3/8 × 10ft.	r : ϕ1/2 × 1ft.
b : ϕ3/4 × 10ft.	f : ϕ3/8 × 5ft.	j : ϕ3/8 × 5ft.	n : ϕ3/8 × 5ft.	s : ϕ3/8 × 1ft.
c : ϕ3/8 × 5ft.	g : ϕ3/8 × 5ft.	k : ϕ3/8 × 10ft.	o : ϕ1/4 × 5ft.	t : ϕ3/8 × 1ft.
d : ϕ3/8 × 5ft.	h : ϕ3/8 × 5ft.	l : ϕ3/8 × 10ft.	p : ϕ1/4 × 5ft.	u : ϕ5/8 × 1ft.

$R = (\boxed{25 \times 0.175} + \boxed{1 \times 0.121} + \boxed{1 \times 0.081} + \boxed{75 \times 0.040} + \boxed{10 \times 0.015})\ \boxed{3.3} + \boxed{1.1}$
(a, b; u; r; c~n, s, t; o, p; RXYQ240PATJ; 116%)

$= 11.027 \Longrightarrow \boxed{11.0\text{lb}}$

Round off in units of 0.1 lb.

Note 1.

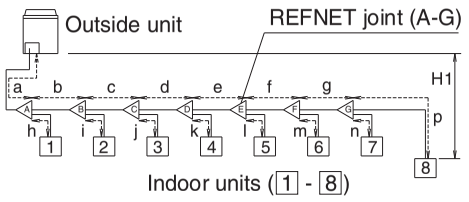
When the equivalent pipe length between outside and indoor units is 295 ft or more, the size of main pipes (both gas side and liquid side (refer to figure 16) must be increased according to the right table.

(Refer to figure 16)
1.Outdoor unit
2.Main pipes
3.Increase
4.First refrigerant branch kit
5.Indoor unit

System	Gas pipe	Liquid pipe
RXYQ72PA type	ϕ3/4 > ϕ7/8	ϕ3/8 > ϕ1/2
RXYQ96PA type	ϕ7/8 > ϕ1	ϕ3/8 > ϕ1/2
RXYQ108PA type	Not Increased	ϕ1/2 > ϕ5/8
RXYQ144PA type	ϕ1-1/8 > ϕ1-1/4	ϕ1/2 > ϕ5/8
RXYQ168PA type	ϕ1-1/8 > ϕ1-1/4	ϕ5/8 > ϕ3/4
RXYQ192PA type	ϕ1-1/8 > ϕ1-1/4	ϕ5/8 > ϕ3/4
RXYQ216PR type	ϕ1-1/8 > ϕ1-1/4	ϕ5/8 > ϕ3/4
RXYQ240PR type	Not Increased	ϕ5/8 > ϕ3/4

Note 2.

Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of “Branch with REFNET joint”)

Required Conditions	Example Drawings	
1. It is necessay to increase the pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size.	8 b+c+d+e+f+g+p≤ 295 ft. increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows: ϕ3/8 > ϕ1/2, ϕ5/8 > ϕ3/4, ϕ7/8 > ϕ1*, ϕ1-3/8 > ϕ1-1/2*, ϕ1/2 > ϕ5/8, ϕ3/4 > ϕ7/8, ϕ1-1/8 > ϕ1-1/4*
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	a+b×2+c×2+d×2+e×2+f×2+g×2 +h+i+j+k+l+m+n+p≤ 3280 ft.	
3. Indoor unit to the nearest branch kit ≤ 130 ft.	h, i, j..... p ≤ 130 ft.	
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 130 ft.	The farthest indoor unit 8 The nearest indoor unit 1 (a+b+c+d+e+f+g+p)-(a+h)≤ 130 ft.	

*If the specified pipe diameter is not available on site, do NOT substitute with a pipe of greater diameter.

8. FIELD WIRING

- All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after switching off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect ground and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.
  Gas pipes : can explode or catch fire if there is a gas leak.
  Sewage pipes : no grounding effect is possible if hard plastic piping is used.
  Telephone ground wires and lightning rods : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.
- Be sure to install a ground leakage circuit breaker.
  This unit uses an inverter, so install the ground leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the ground leakage circuit breaker itself.
- Ground leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed.
  (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring.
  (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off when the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Attach the power wire securely.
- Never connect the power supply in reversed phase.
  The unit can not operate normally in reversed phase.
  If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced.
  If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and ground terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
  Running the product in reversed phase may break the compressor and other parts.

8-1 Power circuit, safety device and cable requirements

- A power circuit (see the following table) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an ground leakage circuit breaker.
- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Recommended Max Overcurrent Protection	Transmission line selection
RXYQ72PAYD	ϕ 3, 60Hz	460V	20.2A	25A	AWG18-16
RXYQ96PAYD	ϕ 3, 60Hz	460V	20.3A	25A	AWG18-16
RXYQ108PAYD	ϕ 3, 60Hz	460V	20.5A	30A	AWG18-16
RXYQ144PAYD	ϕ 3, 60Hz	460V	20.2+20.2A	25A+25A	AWG18-16
RXYQ168PAYD	ϕ 3, 60Hz	460V	20.2+20.3A	25A+25A	AWG18-16
RXYQ192PAYD	ϕ 3, 60Hz	460V	20.3+20.3A	25A+25A	AWG18-16
RXYQ216PYDNR	ϕ 3, 60Hz	460V	20.5+20.3A	25A+30A	AWG18-16
RXYQ240PYDNR	ϕ 3, 60Hz	460V	20.5+20.5A	30A+30A	AWG18-16
RXYQ72PATJ	ϕ 3, 60Hz	208-230V	36.1A	40A	AWG18-16
RXYQ96PATJ	ϕ 3, 60Hz	208-230V	36.1A	50A	AWG18-16
RXYQ108PATJ	ϕ 3, 60Hz	208-230V	41.3A	60A	AWG18-16
RXYQ144PATJ	ϕ 3, 60Hz	208-230V	36.1+36.1A	40A+40A	AWG18-16
RXYQ168PATJ	ϕ 3, 60Hz	208-230V	36.1+36.1A	40A+50A	AWG18-16
RXYQ192PATJ	ϕ 3, 60Hz	208-230V	36.1+36.1A	50A+50A	AWG18-16
RXYQ216PTJUR	ϕ 3, 60Hz	460V	36.1+41.3A	25A+30A	AWG18-16
RXYQ240PTJUR	ϕ 3, 60Hz	460V	41.3+41.3A	30A+30A	AWG18-16

8-2 Wiring Connection Example for Whole System

(Refer to figure 17)

1. Power supply
2. Main switch
3. Ground leakage circuit breaker
4. Fuse
5. Outside unit
6. Remote controller
7. Indoor unit

NOTE

- Make sure the communication/control wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. apart.
  Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described in "**7-5 Power Wiring Connection Procedure**".
- Transmission wiring should be secured as described in "**7-4 Transmission Wiring Connection Procedure**".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.

8-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the sides, the front (knock hole) or the bottom frame (knock hole) .
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit or from a piping hole.

(Refer to figure 18-1)
1. Electric wiring diagram
   Printed on the back of the electrical components box lid.
2. Knockout hole
3. Power line
4. Transmission line

(Refer to figure 18-2)
1. Electrical components box lid
2. Service lid
3. [Service precautions] Label location

⚠ NOTE

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
  (Refer to figure 18-1, 2)
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.
  (Refer to figure 18-1, 2)
- If small animals might enter the unit, block off any gaps (hatching parts in figure 18-1, 2) with material (field supply).

8-4 Transmission Wiring Connection Procedure

- Referring to figure 19 connect the transmission wiring between outside unit and indoor unit, outside unit and outside unit of other system, outside unit and outside unit of same system.

  (Refer to figure 19)
  1. Master unit (*)
  2. Sub unit (*)
  3. Outside unit A
  4. Outside unit B
  5. Electrical components box (1)
  6. (Only RXYQ~PAYD)
     Electrical components box (2)
  7. (Only RXYQ~PAYD)
     Do not open the electrical components box (2) lid.
     (There are no work when installation)
  8. Never connect the power wire.
  9. To outside unit of other system
  10.
  11. Indoor unit

  (*) : The Outside unit that connect the transmission wiring to the Branch Selector unit is Master unit of the multi system. And the other units are Sub unit. (In this figure, Outside unit A is the Master unit.)
  Check operation in installation work, Onsite settings and so on are done by operating the PC-board (A1P) of Master unit.
- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.
  See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol [1] ~ [2], **see figure 19**) should be done within the following limitations.
  If they are exceeded, transmission problems may occur.

  [1] Between outside unit and indoor unit
  Between outside unit and outside unit of other systems
  Max. wiring length : 3280 ft
  Max. total wiring length : 6560 ft
  Max. no. of branches : 16
  [Note]
  No branch is allowed after branch (**See figure 20**)
  Max. no. of outside units of other system that can be connected : 10

  (Refer to figure 20)
  1. Branch
  2. Branch after branch

  [2] Between outside unit and outside unit of same system
  Max. wiring length: 100 ft
- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 21.

  (Refer to figure 21)
  1. In the electrical components box
  2. Retain to the electrical components box with the accessory clamp (1).
  3. Vinyl tube (accessory)
- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 22.

  (Refer to figure 22)
  1. Liquid pipe
  2. Gas pipe
  3. Transmission wiring
  4. Insulation material
  5. Finishing tape
- For multi system:
  1. Transmission wiring between outside units in the same piping system must be connected to terminals Q1 and Q2 (TO MULTI UNIT).
     Connecting the wires to the F1, F2 (TO OUT/D UNIT) terminals results in system malfunction.
  2. Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the master unit. The outside unit that connected transmission wiring to indoor unit is the master unit. The others are sub unit.

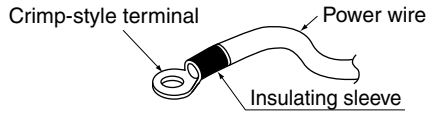
8-5 Power Wiring Connection Procedure

- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 23.
- The L1, L2, L3 and N phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

  (Refer to figure 23)
  1. Power supply
     (MODEL PAYD : 3 ~ 460V 60Hz)
     (MODEL PATJ : 3 ~ 208-230V 60Hz)
  2. Ground leakage circuit breaker
  3. Branch switch, ground leakage circuit breaker
  4. Ground wire
  5. Electrical components box (1)
  6. (Only RXYQ~PAYD)
     Electrical components box (2)
  7. (Only RXYQ~PAYD)
     Do not open the Electrical components box (2) lid.
     (There are no work when installation.)
  8. Attach insulation sleeves
  9. Power supply terminal block
  10. Ground terminal
  11. Clamp (1) (accessory)
  12. Vinyl tube (accessory)

⚠ CAUTION

- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)

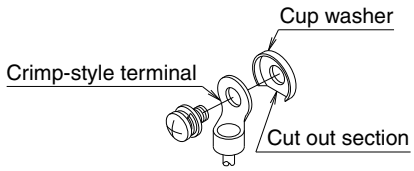


- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.

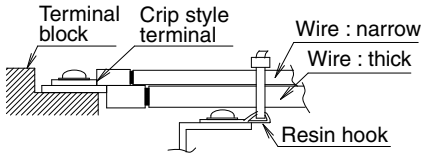
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them. See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

- When pulling the ground wire out, wire it so that it comes through the cut out section of the cup washer. (See the figure below.) An improper ground connection may prevent a good ground from being achieved.



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



8-6 Procedure for Wiring Inside Units

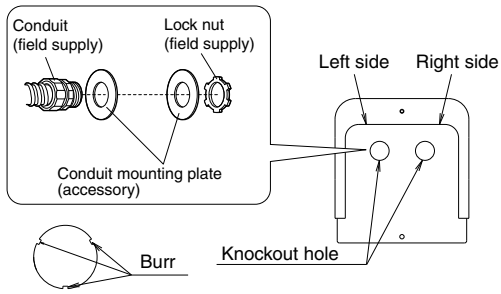
- Referring to figure 24, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring.
  If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 in. away from the power wiring.
- Make sure all wiring does not make contact with the pipes (hatching parts in the figure 24).
-

(Refer to figure 24)

1. Retain with accessory clamp (3).
2. Electric conduit
3. When routing out the power/ground wires from the left side.
4. When routing out the transmission wiring from the opening for piping.
5. When routing out the power/ground wires from the front.
6. Clear over 2 in..
7. When routing out the transmission wiring from the knockout hole.
8. Retain to the back of the column support with the accessory clamp (2).
9. When routing out the power/ground wires from the right side.
10. Power wiring
11. Transmission wiring
12. Ground wire

Precautions when knocking out knockout holes

- To punch out a knockout hole, hit it with a hammer.
- Open an appropriate hole as needed.
- After knocking out the holes, trim off the burr, then we recommend you to paint the edges and areas around the edges using the repair paint to prevent rusting.
- Power line : Open a knockout hole as shown at left and connect it using a conduit.
- Transmission line : Connect it using a conduit in the knockout hole on the right.



- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

9. AIR TIGHT TEST AND VACUUM DRYING

- After finishing piping work, carry out airtight test and vacuum drying.

NOTE

- Always use dry nitrogen gas for the airtightness test.
- Absolutely do not open the shutoff valve until the main power ciruit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

<Needed tools>

Gauge manifold Charge hose valve	• To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A. • Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.
Vacuum pump	• The vacuum pump for vacuum drying should be able to lower the pressure to below 500 microns. • Take care the pump oil never flows backward into the refrigerant pipe during the pump stops.

<The system for air tight test and vacuum drying>

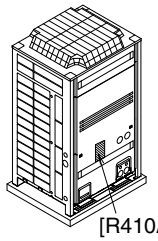
- Referring to figure 25, connect a dry nitrogen tank, refrigerant tank, and a vacuum pump to the outside unit.
  The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 25 are needed in **"11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION"**.

(Refer to figure 25)

1. Gauge manifold
2. Nitrogen
3. Measuring device
4. R410A tank (with siphon)
5. Vacuum pump
6. Charge hose
7. High side equalizer pipe shutoff valve
8. Gas pipe shutoff valve
9. Low side equalizer pipe shutoff valve
10. Liquid pipe shutoff valve
11. Refrigerant charge port
12. Valve A
13. Valve B
14. Valve C
15. Outside unit
16. Indoor unit
17. Shutoff valve
18. Service port
19. Field piping
20. Gas flow

NOTE

- The air-tightness test and vacuum drying should be done using the service ports of equalizer pipe, gas pipe and liquid pipe shutoff valve.
  See the [R410A] Label attached to the front plate of the outside unit for details on the location of the service port (see figure at right)


[R410A] Label

- See **[Shutoff valve operation procedure]** in **"11-1 Before working"** for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe.
  When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.

<Air tight test>

Pressurize the liquid pipe, gas pipe, and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test.
If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

NOTE

<Vacuum drying> Do not energize the indoor unit before performing the vacuum drying.

A triple evacuation is recommended; note that this is basic refrigeration best practice and not specific to Daikin. The refrigerant gauges should be connected to the liquid and suction gas pipes* and a triple evacuation performed. Break the first and second vacuum with dry nitrogen. The final evacuation should be to below 500 microns and a rise test conducted; the system should hold below 500 microns for at least one hour.

***On manifold systems, the equalizer lines must be evacuated separately.**

10. PIPE INSULATION

- Insulation of pipes should be done after performing "**8. AIR TIGHT TEST AND VACUUM DRYING**".
- Always insulate the liquid piping, the gas piping, the equalizer pipe (between the outside units for the outdoor multi system) and these pipe connections.
  Failing to insulate the pipes may cause leaking or burns.
  Be sure to use insulation that is designed for use with HVAC systems.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..
  - If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in..
    See the Engineering data book for detail.
- If there is a possibility that condensation on the shutoff valve might drip down into the indoor unit through gaps in the insulation and piping because the outside unit is located higher than the indoor unit, etc., this must be prevented by caulking the connections, etc. **(Refer to figure 26)**
- The piping lead-out hole lid should be attached after opening a knock hole. **(Refer to figure 27)**
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of "**11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION**". **(Refer to figure 30)**

(Refer to figure 26)

1. Insulation material
2. Caulking, etc.

(Refer to figure 27)

1. Piping lead-out hole lid
2. Open a knock hole at "▨".
3. Block "▨".

NOTE

- After knocking out the holes, we recommend you remove burrs in the knock holes (**See figure 27**) and paint the edges and areas around the edges using the repair paint.

11. CHECKING OF DEVICE AND INSTALLATION CONDITIONS

Be sure to check the followings.

For those doing electrical work

1. Make sure there is no faulty transmission wiring or loosing of a nut.
   See "**7-4 Transmission Wiring Connection Procedure**".
2. Make sure there is no faulty power wiring or loosing of a nut.
   See "**7-5 Power Wiring Connection Procedure**".
3. Has the insulation of the main power circuit deteriorated?
   Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

For those doing pipe work

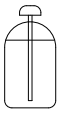
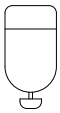
1. Make sure piping size is correct.
   See "**6-1 Selection of piping material and Refrigerant branching kit**".
2. Make sure insulation work is done.
   See "**9. PIPE INSULATION"**.
3. Make sure there is no faulty refrigerant piping.
   See "**6. REFRIGERANT PIPING**".

12. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION

The outside unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.
For charging the additional refrigerant, follow the procedure in this chapter.
And then carry out the check operation.

12-1 Before working

[About the refrigerant tank]
Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form.
(See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

[Shutoff valve operation procedure]
When operating the shutoff valve, follow the procedure instructed below.
- Do not open the shutoff valve until **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.
  The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

Tightening torque
The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

<Size of Shutoff Valve>

	72PA type	96PA type	108PA/120P(R) type
Liquid pipe shutoff valve	ϕ3/8 The 108PA type corresponds to the ϕ1/2 - diameter onsite piping using the accessory pipe.		
Low side equalizer pipe shutoff valve	ϕ1 All types corresponds to the ϕ3/4 - diameter onsite piping using the accessory pipe.		
Gas shutoff valve	ϕ3/4 The 72PA type corresponds to the ϕ3/4 - diameter onsite piping using the accessory pipe. The 96PA type corresponds to the ϕ7/8 - diameter onsite piping using the accessory pipe. The 108PA/120P(R) type corresponds to the ϕ1-1/8 - diameter onsite piping using the accessory pipe.		
High side equalizer pipe shutoff valve	ϕ3/4		

(Refer to figure 28)
1. Service port
2. Cap
3. Hex holes
4. Shaft (valve body)
5. Seal section

To open
1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

To close
1. Remove the cap and turn the shaft clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

<Tightening torque>

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)			
	Shaft (valve body)		Cap (valve lid)	Service port
ϕ 3/8	3.98 - 4.87	Hexagonal wrench 4mm	9.95 - 12.17	8.48 - 10.3
ϕ 1/2	5.97 - 7.30		13.3 - 16.2	
ϕ 3/4	19.9 - 24.3	Hexagonal wrench 8mm	16.6 - 20.3	
ϕ 1				

[How to Check How Many Units are Connected]
It is possible to find out how many indoor or outside unit in the system are turned on by operating the push button on the PC-board (A1P) of outside unit (In case of multi system master unit).
Follow the procedure below to check how many indoor or outside units are turned on.

(LED display: ● ...OFF ☼ ...ON ◑ ...Blinking ＊ ...Uncertain)		LED display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at **Setting Mode 1** (H1P : off), and set the MONITOR MODE (H1P : Blinking).		◑	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outside units : eight times	◑	●	●	☼	●	●	●
	For checking the number of indoor units : five times	◑	●	●	●	☼	●	☼
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ◑ standing for "1" and ● standing for "0".		◑	＊	＊	＊	＊	＊	＊
Ex: For the LED display at right, this would be "0 1 0 1 1 0 ", which would mean 22 units are connected. 32 × **0** + 16 × **1** + 8 × **0** + 4 × **1** + 2 × **1** + 1 × **0** = 22 units Note: "000000" indicates 64 units.		◑	●	◑	●	◑	◑	●
(4) Press the MODE button (BS1) once. This returns to **Setting Mode 1** (H1P : OFF, default).		●	●	☼	●	●	●	●

⚠ NOTE

- Press the "MODE button" (BS1) if you get confused while operating.
  This returns to **Setting Mode 1** (H1P : OFF, default).

12-2 Procedure of Adding Refrigerant charging and check operation

⚠ WARNING **⚠ Electric Shock Warning**

- Make sure to close the electrical components box lid before turning on the power.
- Perform the setting on the PC-board (A1P) of the outside unit and check the LED display after the power is on via the inspection door which is in the electrical components box lid.

  (Refer to figure 29)
  1. Electrical components box (1)
  2. Inspection door
  3. Electrical components box (1) lid
  4. LED (H1~8P)
  5. Push button(BS1~5)
  6. Lift the protruding part to open the inspection door.
- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.
  There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.
- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.
  After the outside unit stops operating, the fan may keep rotation for a while.

⚠ NOTE

- If operation is performed within 12 minutes after the indoor and outside units are turned on, H2P will be lit on and the compressor will not operate.
  Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.
  When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.
  The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.
  The refrigerant charge port of this product have electric expansion valve.
  The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, nomal operation, etc.).
  If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.
- Make sure to perform the check operation after installation.
  Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.
  And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.
  Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.
  About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

12-2-1 Procedure of Adding Refrigerant charging

1. Make sure the following works are complete in accordance with the installation manual.
   - Piping work
   - Wiring work
   - Air tight test
   - Vacuum drying
   - Installation work for indoor unit
2. Calculate the “additional charging amount” using “How to calculate the additional refrigerant to be charged” in **“6-5 Example of connection”**. Be sure to note the additional charge amount on the refrigerant charge label.
3. Open the valve B (**See the figure 30**. The valve A,C and the liquid pipe, gas pipe, equalizer pipe shutoff valves must be left closed), and charge the refrigerant of the “additional charging amount” from the liquid side shutout valve service port.

   (Refer to figure 30)
   1. Measuring device
   2. R410A tank (with siphon)
   3. Charge hose
   4. High side equalizer pipe shutoff valve
   5. Gas pipe shutoff valve
   6. Low side equalizer pipe shutoff valve
   7. Liquid pipe shutoff valve
   8. Refrigerant charge port
   9. Valve A
   10. Valve B
   11. Valve C
   12. Outside unit A
   13. Outside unit B
   14. Indoor unit
   15. Field pipings
   16. Refrigerant flow
   17. Shutoff valve
   18. Service port
4. If the “additional charging amount” was charged fully, close the valve B and go to step 6.
   If the “additional charging amount” was not charged fully, close the valve B and go to step 5.
5. Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the “additional charging amount”.

NOTE

- For performing the automatic refrigerant charging operation, the push button on the PC-bord (A1) of outside unit are used. (See figure 29.)
  And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 31.) For operating the push button and opening or closing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

  Outdoor temp. : 32˚F DB ~ 109˚F DB
  Indoor temp. : 50˚F DB ~ 90˚F DB → Cooling mode

  Less than above range → Heating mode

  When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.
  During charging in heating mode, a person must manually close valve A and stop operation.
  Beforehand, check the remaining refrigerant that is needed to charge based on the “additional charging amount” in step 2 and the charged amount in step 3.
- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcedly by pushing MODE button (BS1).

(Refer to figure 31)
1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. High side equalizer pipe shutoff valve
5. Gas pipe shutoff valve
6. Low side equalizer pipe shutoff valve
7. Liquid pipe shutoff valve
8. Refrigerant charge port
9. Valve A
10. Valve B
11. Valve C
12. Outside unit A
13. Outside unit B
14. Indoor unit
15. Field pipings
16. Refrigerant flow when charging
17. Shutoff valve
18. Service port
19. The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°FDB (26 lb at 32°FDB). (According to outdoor temp. or the refrigerant amount in the tank, the charging rate may speed up). If you need to speed up in case of multi system, connect the refrigerant tanks to each outside unit.

[Automatic refirgerant charging operation procedure]

NOTE

- The marks of LED mean as follows.
  ● : OFF ☼ : ON ◑ : Blinking ∗ : OFF, ON or Brinking

(1) Open the liquid pipe and gas pipe shutoff valves. (The valve A~C must be closed. See figure 31.)
(2) • Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (*1) And turn the power to the outdoor unit and all connected indoor units. (*2)
  • After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF.
  If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
(3) Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

(4) Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	☼	☼	☼	☼	☼	☼

(5) Hold the TEST button (BS4) down for 5 seconds or more.
(The LED displays will change as below and fan of outside unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	◑	●	●	●	∗	∗

(6) When the compressor starts working and the LED displays change any state in below (*3), go to “In case of cooling mode” or “In case of heating mode” in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	
◑	◑	◑	●	☼	●	☼	→ Go to “In case of cooling mode”
◑	◑	●	●	☼	●	☼	→ Go to “In case of heating mode”

In case of cooling mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels (*5).
After that, open the valve A immediately (See figure 31) (*6) and watch the remote controller display of indoor unit.
(8) If the remote controller display shows “PE” code (*7), ready to close the valve A.
And go to procedure (9).
If the remote controller display shows other code, close the valve A immediately and refer to [Remote controller cooling mode malfunction code]

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(9) When the compressor stop working (the fan may continue rotation.), close the valve A immediately (*8).
And check the LED displays are as below and the remote controller display shows “P9” code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	◑	◑	☼	☼	☼	☼

After checking, push the MODE button (BS1) once and the charging is complete.

In case of heating mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels.
After that, open the valve A immediately (See figure 31) (*6) and check the charged amount by meauring device.
During operation, if the remote controller display shows “P2” or “P8” code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(8) When the required amount of refrigerant is charged, close the valve A (See figure 30) (*8) and push the RETURN button (BS3) once. And then go to procedure (9).
(9) Push the MODE button (BS1) once, and the charging is complete.

Notes (*1)~(*9)

(*1) Lead the refrigerant charge hose etc from the pipe intake.
All front panels must be closed at the procedure (7).
(*2) • If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.
Check the number of outside and indoor units that is powered.
For checking, see [How to check how many units are connected] in chapter 11-1.
• To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
(*3) It takes about 2~10 minutes for getting stability of refrigerant state.
If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
(*4) If the TEST button (BS4) is not pushed within 5 minutes, “P2” code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
(*5) If the front panel is opened during the operation, the system cannot operate properly.
(*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and “P2” code are displayed in remote controller.
In this case, refer [Remote controller cooling (or heating) mode malfunction code].
(*7) Depending on the situation of operation such as the charging amount is little, the “PE” code may not be displayed and the “P9” code may be displayed.
(*8) Always close the valve A and take the tank off.
The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when ather operation (Check operation, nomal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

[Remote controller cooling mode malfunction code]

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. ⚠ **Beware the fan running. The outside unit does not stop operation.**	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.	After correcting the abnormality, restart the operation from procedure (3).
*	Operation is stoped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	

[Remote controller heating mode malfunction code]

Code	The work contents
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of “In case of heating mode”.
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.

6. After completing the additional refrigerant charging, record the charging amount on the accessory “REQUEST FOR THE INDICATON” label (Installation records) and adhere it to the back side of the front panel.

12-2-2 Procedure of check operation

- Check operation perform the following work. Do the check operation following below.
Otherwise, malfunction code “U3” will be displayed in the remote controller and nomal operation can not be carried out.
  - ■ Check of shutoff valve opening
  - ■ Check of miswiring
  - ■ Judgment of piping length
  - ■ Check of refrigerant overcharge

⚠ NOTE

- Check operation can not carried out at outdoor temp. less than 23°F.
Perform the check operation at day or time that outdoor temp. is 23°F or more.

[Check Operation Procedure]

(1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outside unit and all connected indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)
(2) Make the onsite settings as needed using the push button (BS1-BS5) on the outside unit PC-board (A1P) with the power on. (See **“12 Onsite Settings”**)

(3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the electrical components box lid. (See figure 32) The system operation for about 40~60 minutes and automatically stops the check operation.
If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

(Refer to figure 32)

1. Electrical components box (1) lid
2. (Only RXYQ~PAYD
   Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

NOTE

For interrupting the check operation, push RETURN button (BS3).

[Remote controller displays malfunction code]

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outside unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outside unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outside or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outside or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	• Check if the additional refrigerant charge has been finished correctly. • Recalculate the additional amount refrigerant from the piping length and add the adequate amount.
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1,Q2)" terminal on the outside unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the “TO MULTI UNIT (Q1, Q2)” terminal.

NOTE

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

13. ONSITE SETTINGS

NOTE

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid.
The outside unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.

Use the push button switches (BS1 through BS5) on the outside unit PC-board (A1P) to make the necessary onsite settings.
See the “Service Precautions” label (upper) on the electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting.
Make sure to record the setting on the accessory “REQUEST FOR THE INDICATION” label.

WARNING **Electric Shock Warning**

Use an insulated rod to operate the push buttons via the inspection door of electrical components box lid.
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

14. TEST RUN

14-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the indoor unit are finished and there are no danger to operate.

14-2 Test Run

After all works are completed, operate the unit normally and check the following.
(1) Make sure the indoor and outside units are operating normally.
(2) Operate each indoor unit one by one and make sure the corresponding outside unit is also operating.
(3) Check to see if cold (or hot) air is coming out from the indoor unit.
(4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

NOTE

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- The outside unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first istallation, the malfunction code “U3” will be displayed in the remote controller. Perform the check operation following **“11-2-2 Procedure of Check Operation”**.

14-3 Checks After Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  → Record them on the accessory “REQUEST FOR THE INDICATION” label.
  And attach the label on the back side of the front panel.
- Record the installation date.
  → Record the installation date on the accessory “REQUEST FOR THE INDICATION” label in accordance with the IEC60335-2-40.
  And attach the label on the back side of the front panel.

NOTE

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

15. CAUTION FOR REFRIGERANT LEAKS

(Points to note in connection with refrigerant leaks)

Introduction:

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

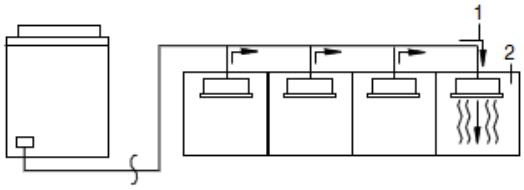
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level:

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb/ft^3 (the weight in lb of the refrigerant gas in 1 ft^3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1–2 below and take whatever action is necessary to comply.

1. Calculate the amount of refrigerant (lb) charged to each system separately.

amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb) in the system

NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).

5.2 REYQ72~120PAYD (Heat Recovery, 460V) REYQ72~120PATJ (Heat Recovery, 208-230V)

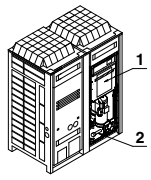


figure 1

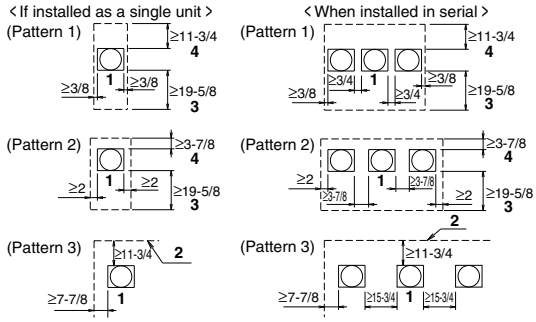


figure 2

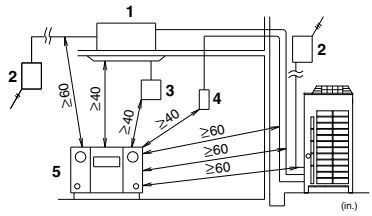


figure 3

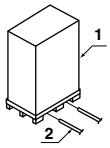


figure 4

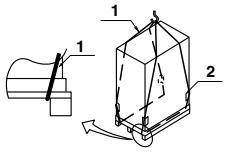


figure 5

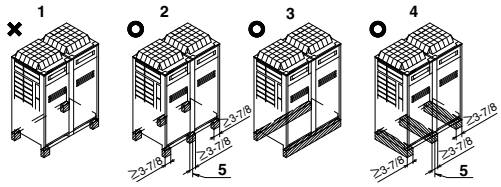


figure 6

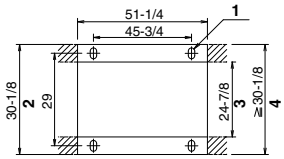


figure 7

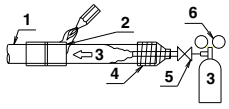


figure 8

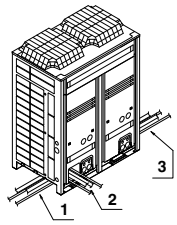


figure 9

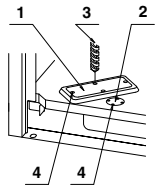
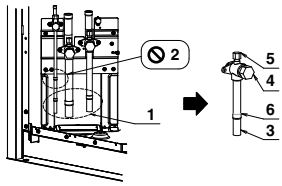


figure 10



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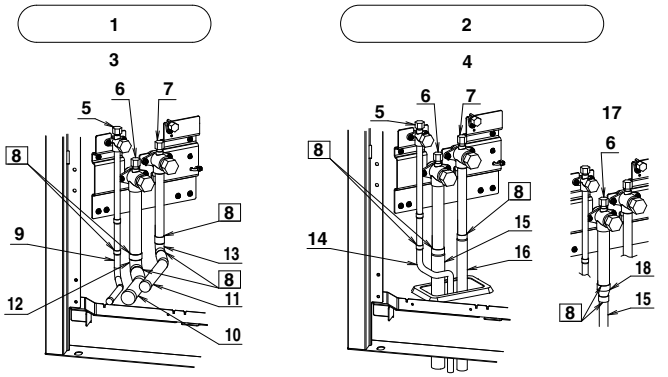

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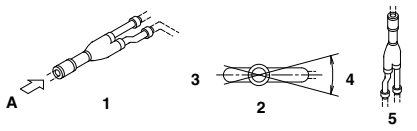

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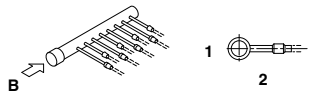

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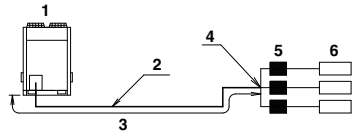

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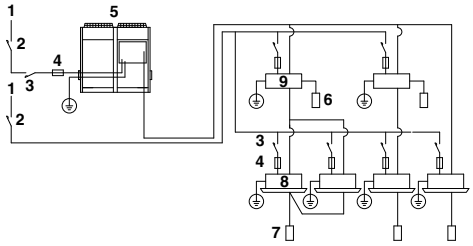

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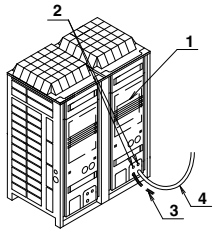
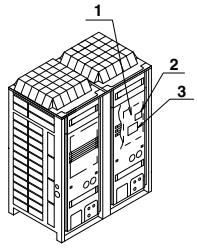


figure 17-1



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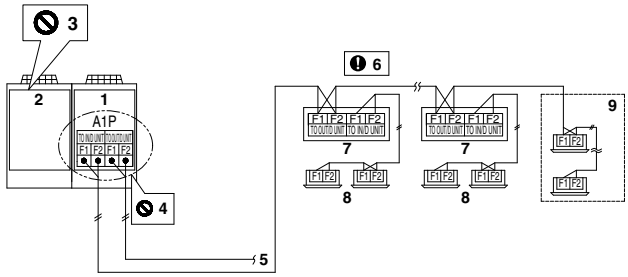

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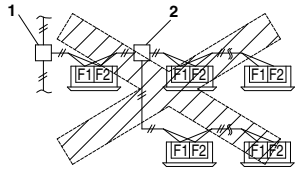

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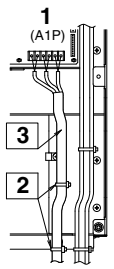

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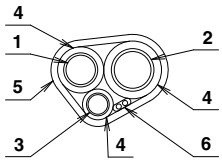

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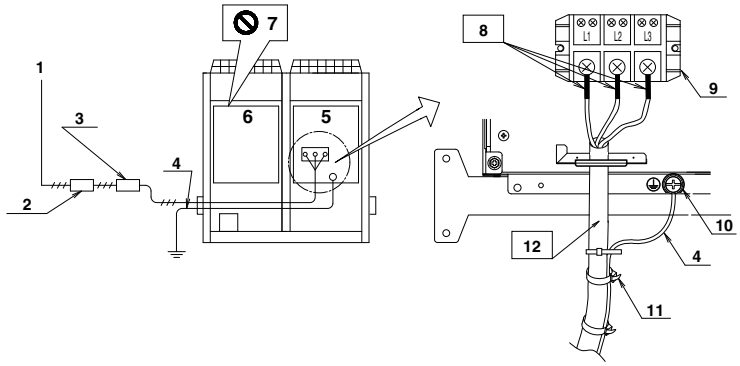

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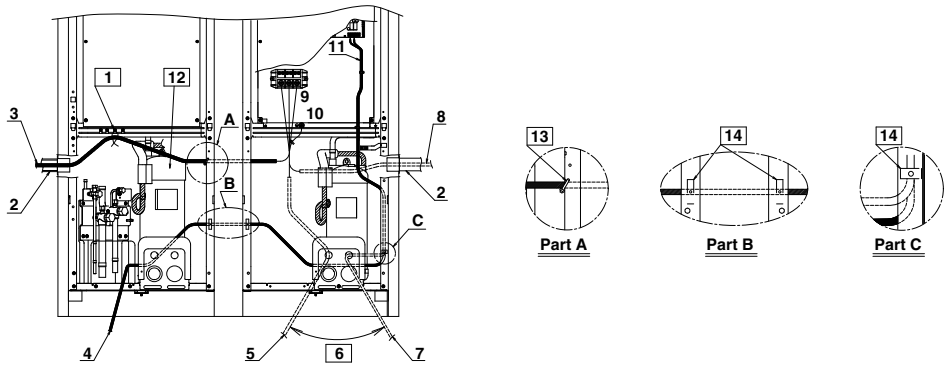

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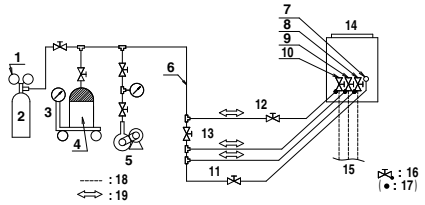

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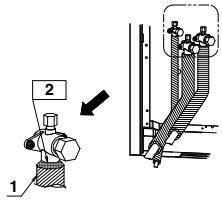

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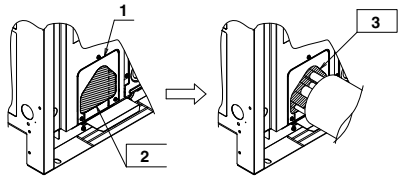

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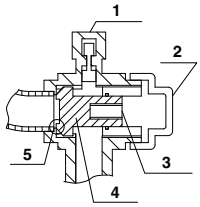

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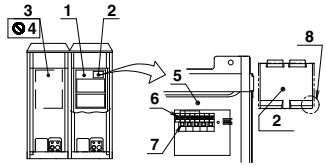

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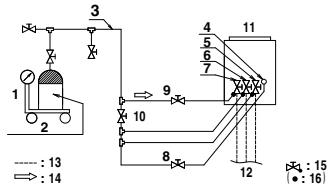

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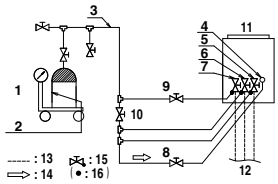


figure 30

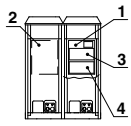


figure 31

1. FIRST OF ALL

- This document is an installation manual for the Daikin REYQ-PA Series VRV Inverter. Before installing the unit, read this manual thoroughly, following the instructions contained in it.
  After installation, do a test run to make sure the unit runs properly, and then explain how to operate and take care of the unit to the customer, using the operation manual.
  Lastly, make sure the customer keeps this manual, along with the operation manual, in a safe place.

1-1 Safety considerations

Read these ***SAFETY CONSIDERATIONS for Installation*** carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**
- **When wiring, position the wires so that the electric parts box lid can be securely fastened. Improper positioning of the electric parts box lid may result in electric shocks, fire, or the terminals overheating.**
- **Before touching electrical parts, turn off the unit.**
- **It is recommended to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.**
- **Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.**
- **When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**
- **Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.**

⚠ CAUTION

- **Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.**
- **Do not allow children to play on or around the unit to prevent injury.**
- **Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.**
- **Heat exchanger fins are sharp enough to cut.
  To avoid injury wear glove or cover the fins when working around them.**
- **Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.**
- **Insulate piping to prevent condensation.**
- **Be careful when transporting the product.**
- **Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.**

- **Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.**
- **Refrigerant R-410A in the system must be kept clean, dry, and tight.**
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping and follow the procedures.
- **Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.**
- **The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.**
- **Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.**
- **Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.**
- **Do not install the air conditioner in the following locations:**
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves.
  Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled.
  Operating the unit in such conditions can cause a fire.
- **Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.**

NOTE

- **Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.**
- **Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.**
- **If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.**
- **This air conditioner is an appliance that should not be accessible to the general public.**
- **As design pressure is 478 psi, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

1-2 Special notice of product

[CLASSIFICATION]
This air conditioner comes under the term "appliances not accessible to the general public".

[REFRIGERANT]
VRVIII System use R410A refrigerant.

- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.
  Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.
  A. Clean and dry
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
  B. Tight
  Take care to keep the system tight when installing.
  R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation.
  R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.

[DESIGN PRESSURE]
Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

1-3 Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

2. INTRODUCTION

- REYQ-PA series are designed for outdoor installation and used for cooling and heating applications.
- The Branch Selector units that combined with REYQ-PA system for changing the refrigerant flow to indoor units are BSVQ36 · 60 · 96P type only. To combine with other type Branch Selector unit will cause malfunction.
- The indoor units that combined with REYQ-PA system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

2-1 Combination

- The indoor units can be installed in the following range.

〈Outside unit〉	〈Total capacity index of indoor units〉
REYQ72PAYD/PATJ	43 ~ 93.5
REYQ96PAYD/PATJ	57.5 ~ 124.5
REYQ120PAYD/PATJ	72 ~ 156

- If the total capacity of the connected indoor units exceeds the capacity of the outside unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.

2-2 Standard supplied accessories

Confirm the following accessories are included. The storage location of the accessories is shown in figure 1.

NOTE

Do not throw away any of the accessories until installation is complete. They are needed for installation work.

Name	Clamp(1)	Clamp(2)	Vinyl tube	Conduit mounting plate		Manuals, etc.
Quantity	9 pcs.	3 pcs.	4 pcs.	2 pcs.	2 pcs.	1 pc. about each item
Shape						· Operation manual · Installation manual · "REQUEST FOR THE INDICATON" label (Installation records) · Additional refrigerant charge label

Name		Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Suction gas side accessory pipe (1)			Suction gas side accessory pipe (2)		
Quantity	72PA type	1 pc.	1 pc.	1 pc.			1 pc.		
	96PA type				1 pc.			1 pc.	
	120PA type					1 pc.			1 pc.
Shape				ϕ7/8	ϕ7/8	ϕ1-1/8	ϕ3/4	ϕ7/8	ϕ1-1/8

Name		HP / LP gas side accessory pipe (1)		HP / LP gas side accessory pipe (2)		L type accessory joint (1)	L type accessory joint (2)	accessory joint (2)
Quantity	72PA type	1 pc.		1 pc.		1 pc.	1 pc.	1 pc.
	96PA type		1 pc.		1 pc.			
	120PA type		1 pc.		1 pc.			
Shape		ϕ5/8	ϕ3/4	ϕ5/8	ϕ3/4	ϕ1	ϕ3/4	

(Refer to figure 1)

1. Clamps, Manuals, etc.
2. Accessory pipes

2-3 Option accessory

To install the outside units, the following optional parts are also required. To select an optimum kit, refer to "**6. REFRIGERANT PIPING**".

- **Refrigerant branching kit**

	for 3 piping			
REFNET header	–	KHRP25M33H	KHRP25M72H	KHRP25M73HU
REFNET joint	KHRP25A22T	KHRP25A33T	KHRP25M72TU	KHRP25M73TU

	for 2 piping		
REFNET header	KHRP26M22H	KHRP26M33H	KHRP26M72H
REFNET joint	KHRP26A22T	KHRP26A33T	KHRP26M72TU

Make sure that any separately purchased accessories are designed for use with R410A.

2-4 Technical and Electrical specifications

Refer to the Engineering Data Book for the complete list of specifications.

2-5 Main components

For main components and function of the main components, refer to the Engineering Data Book.

3. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outside unit and the indoor unit may not exceed the allowable piping length.
   (Refer to **"6. REFRIGERANT PIPING"**)
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.
   Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.
   If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.
   (See the **"Installation Space Examples"** for the minimum space requirements.)

Installation Space Examples

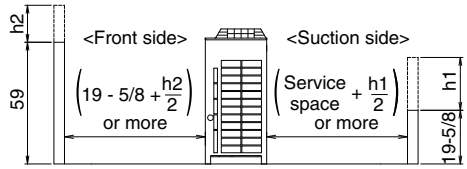
- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F.
  If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outside unit, take an even larger space on the air intake than is shown in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

(Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.
- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



DANGER

- **Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.**
- **Refrigerant gas in heavier air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
  Refer to the chapter "CAUTION FOR REFRIGERANT LEAKS".

NOTE

1. An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, etc.
   Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

(Refer to figure 3)
1. Indoor unit
2. Branch switch, ground leakage circuit breaker
3. Remote controller
4. COOL/HEAT selector
5. Personal computer or radio

2. When installing in locations where there is heavy snowfall, implement the following snow measures.
   - Ensure the base is high enough that intakes are not clogged by snow.
   - Remove the rear intake grille to prevent snow from accumulating on the fins.

4. INSPECTING AND HANDLING THE UNIT

- At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.
- When handling the unit, take into account the following :

1. Fragile, handle the unit with care.

   Keep the unit upright in order to avoid compressor damage.
2. Decide on the transportation route.
3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. **(Refer to figure 4)**
4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
   - Use a sling sufficiently strong to hold the mass of the unit.
   - Use 2 belts of at least 27 ft long.
   - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
   - Hoist the unit making sure it is being lifted at its center of gravity.
5. After installation, remove the transportation clasp (yellow) attached to the large openings. **(Refer to figure 4)**

(Refer to figure 4)
1. Packaging material
2. Forklift

(Refer to figure 5)
1. Belt sling
2. Wear plate

5. PLACING THE UNIT

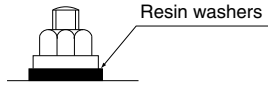
- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. **(Refer to figure 6)**
- The base should support the unit with the extent larger than hatched area in figure 7.
  If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- Secure the unit to its base using foundation bolts. (Use four commercially available M12-type foundation bolts, nuts, and washers.)
- The foundation bolts should be inserted 13/16 in..

(Refer to figure 6)
1. Independent base (four corner type)
2. Independent base (with center support type)
3. Beam base (Horizontal)
4. Beam base (Vertical)
5. Center of the product

(Refer to figure 7)
1. Foundation bolt point (ϕ9/16 in. dia, : 4positions)
2. (Depth of product)
3. (Inner dimension of the base)
4. (Outer dimension of the base)

NOTE

- There are restrictions on the refrigerant pipe connecting order between outside unit in the case of the multi system.
  See "**2-1 Combination**" for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation.
  Drain water is sometimes discharged from the outside unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.



6. REFRIGERANT PIPING

NOTE

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until **"7. FIELD WIRING"** and **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux.
  (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

6-1 Selection of piping material and Refrigerant branching kit

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 9 mg/10 ft or less.)
- Use the following items for the refrigerant piping.
  Material : Jointless phosphor-deoxidized copper pipe
  Size : See **"6-5 Example of connection"** to determine the correct size.
  Thickness : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the "**6-5 Example of connection**".
- Outside unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outside units (in case of multi system) and piping branches.
  Use only separately sold items selected specifically according to the outside unit multi connection piping kit, the refrigerant branching kit selection in the "**6-5 Example of connection**".

6-2 Protection against contamination when installing pipes

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

Place	Installation period	Protection method
Outdoor	More than a month	Pinch the pipe
	Less than a month	Pinch or tape the pipe
Indoor	Regardless of the period	

NOTE

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

6-3 Pipe connection

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. **(Refer to figure 8)**
  Brazing without performing nitrogen permutation or nitrogen blow into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.

  (Refer to figure 8)
  1. Refrigerant pipe
  2. Location to be brazed
  3. Nitrogen
  4. Taping
  5. Handy valve
  6. Regulator
- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

⚠ NOTE

Do not use anti-oxidants when brazing the pipe joints.
Residue can clog pipes and break equipment.

6-4 Connecting the refrigerant piping

1. Direction to bring out the pipes
The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knock hole in the bottom frame.

(Refer to figure 9)
1. Left-side connection
2. Front connection
3. Right-side connection

Precautions when knocking out knock holes

- Open knock hole (large, small) in the base frame by drilling the 4 concave around it with a ϕ -1/4"-bit. **(Refer to figure 10)**

(Refer to figure 10)
1. Knock hole
   (large : for liquid pipe, suction gas pipe and HP/LP gas pipe)
2. Knock hole (small : for equalizer pipe)
3. Drill
4. Concave section (4 points)

- Be sure to avoid damaging the casing.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
- When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.

2. Removing Pinch Piping
- When connecting refrigerant piping to an outside unit, remove the pinch piping using the procedure in the figure 11.
  (Refer to figure 11)
- About handling of shutoff valves, refer to [Shutoff valve operation procedure] in **"11-1 Before working"**.

⚠ CAUTION

After removing the gass, remove the pinch piping.
Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

(Refer to figure 11)
1. Pich piping (3 pieces)
2. Do not remove the relay piping.
3. Pinch piping
4. Procedure 1 : Confirm the shutoff valve is closed.
5. Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
6. Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.

3. Connecting refrigerant piping to outside units
- Figure 12 shows the example of connecting refrigerant piping to outside units.
- The local inter unit piping next accesorry pipes are field supplyed.

(Refer to figure 12)
1. When connected to the front
2. When connected at lateral side (bottom)
3. Remove the shutoff valve cover to connect.
4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
5. Liquid pipe shutoff valve
6. Suction gas pipe shutoff valve
7. HP/LP gas pipe shutoff valve
8. Brazing
9. Liquid side accessory pipe (1)
10. Suction gas side accessory pipe (1)
11. HP/LP gas side accessory pipe (1)
12. L type accessory joint (1)
13. L type accessory joint (2)
14. Liquid side accessory pipe (2)
15. Suction gas side accessory pipe (2)
16. HP/LP gas side accessory pipe (2)
17. In case of 72PA type use the Accessory joint for connecting the Suction gas side accessory pipe (2) to Suction gas side shutoff valve.
18. Accessory joint

⚠ NOTE

- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.

4. Branching the refrigerant piping
Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit. (Improper installation could lead to malfunctioning or breakdown of the outside unit.)

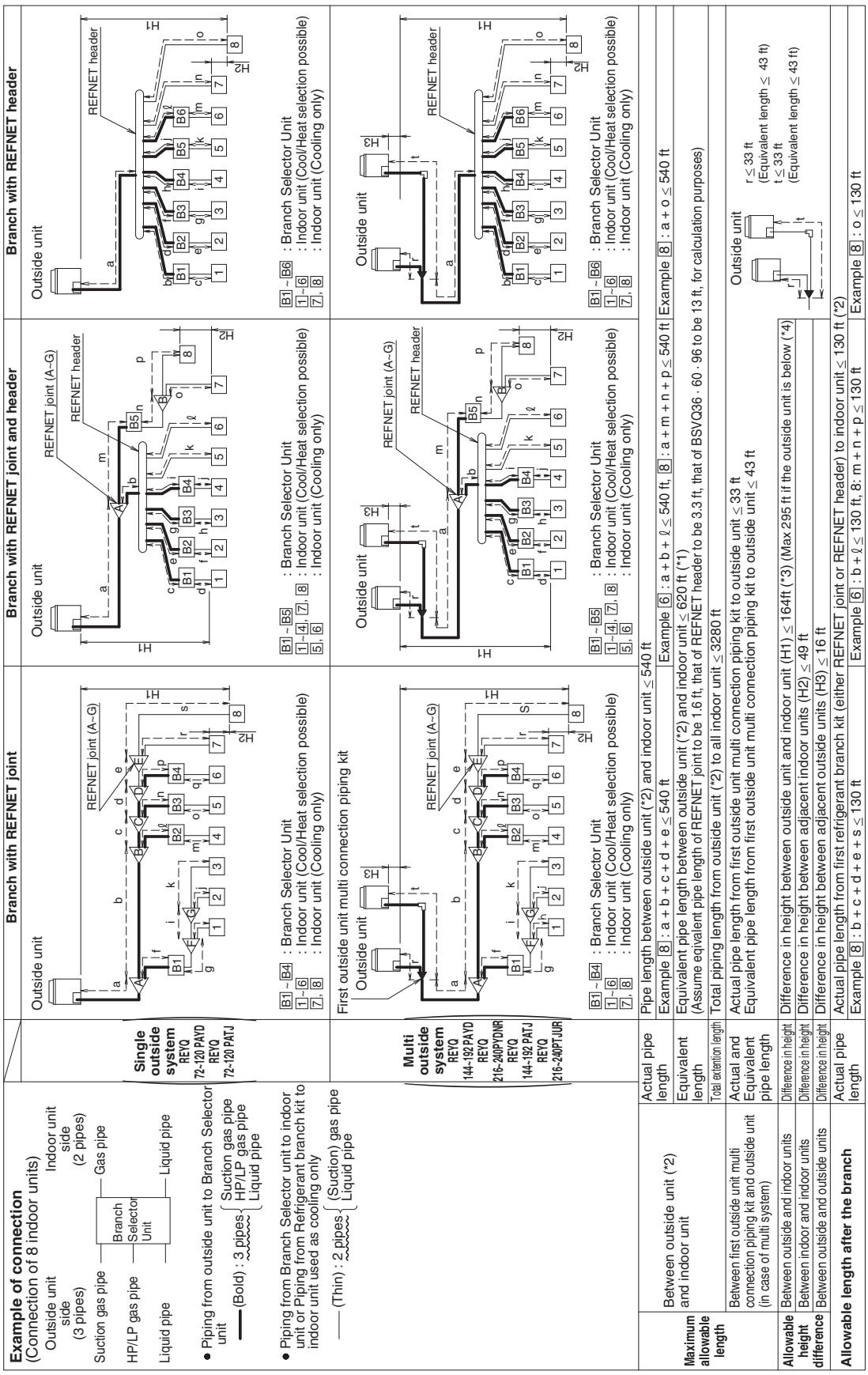
<REFNET joint>
Install the REFNET joint so it splits horizontally or vertically.

(Refer to figure 13)
1. Horizontal
2. A-arrow view
3. Horizontal surface
4. ±30° or less
5. Vertical

<REFNET header>
Install the REFNET header so it splits horizontally.

(Refer to figure 14)
1. Horizontal surface
2. B-arrow view

6-5 Example of connection


Example of connection
(Connection of 8 indoor units)
Outside unit
Indoor unit side (2 pipes)
Gas pipe
Suction gas pipe
Branch Selector Unit
HP/LP gas pipe
Liquid pipe
Liquid pipe
● Piping from outside unit to Branch Selector unit
(Bold) : 3 pipes { Suction gas pipe, HP/LP gas pipe, Liquid pipe
● Piping from Branch Selector unit to indoor unit or Piping from Refrigerant branch kit to indoor unit used as cooling only
(Thin) : 2 pipes { (Suction) gas pipe, Liquid pipe
Branch with REFNET joint
Branch with REFNET joint and header
Branch with REFNET header
Single outside system
REYQ 72-120 PAYD
REYQ 72-120 PATJ
Multi outside system
REYQ 144-192 PAYD
REYQ 216-240PYDNR
REYQ 144-192 PATJ
REYQ 216-240PTJUR
Outside unit
REFNET joint (A~G)
REFNET header
First outside unit multi connection piping kit
B1 ~ B4 : Branch Selector Unit
1 ~ 6 : Indoor unit (Cool/Heat selection possible)
7, 8 : Indoor unit (Cooling only)
B1 ~ B5 : Branch Selector Unit
1 ~ 4, 7, 8 : Indoor unit (Cool/Heat selection possible)
5, 6 : Indoor unit (Cooling only)
B1 ~ B6 : Branch Selector Unit
1 ~ 6 : Indoor unit (Cool/Heat selection possible)
7, 8 : Indoor unit (Cooling only)
Maximum allowable length
Between outside unit (*2) and indoor unit
Actual pipe length
Pipe length between outside unit (*2) and indoor unit ≤ 540 ft
Example 8 : a + b + c + d + e ≤ 540 ft
Example 6 : a + b + ℓ ≤ 540 ft, 8 : a + m + n + p ≤ 540 ft
Example 8 : a + o ≤ 540 ft
Equivalent length
Equivalent pipe length between outside unit (*2) and indoor unit ≤ 620 ft (*1)
(Assume eqivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, that of BSVQ36 · 60 · 96 to be 13 ft, for calculation purposes)
Total extention length
Total piping length from outside unit (*2) to all indoor unit ≤ 3280 ft
Between first outside unit multi connection piping kit and outside unit (in case of multi system)
Actual and Equivalent pipe length
Actual pipe length from first outside unit multi connection piping kit to outside unit ≤ 33 ft
Equivalent pipe length from first outside unit multi connection piping kit to outside unit ≤ 43 ft
Outside unit
r ≤ 33 ft (Equivalent length ≤ 43 ft)
t ≤ 33 ft (Equivalent length ≤ 43 ft)
Allowable height difference
Between outside and indoor units
Difference in height
Difference in height between outside unit and indoor unit (H1) ≤ 164ft (*3) (Max 295 ft if the outside unit is below (*4)
Between indoor and indoor units
Difference in height between adjacent indoor units (H2) ≤ 49 ft
Between outside and outside units
Difference in height between adjacent outside units (H3) ≤ 16 ft
Allowable length after the branch
Actual pipe length
Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 130 ft (*2)
Example 8 : b + c + d + e + s ≤ 130 ft
Example 6 : b + ℓ ≤ 130 ft, 8: m + n + p ≤ 130 ft
Example 8 : o ≤ 130 ft
(*1) Indicates the Outside unit multi-connection piping kit.
(*2) In case of multi outdoor system, re-read "outside unit" to "the first Outside unit multi connection piping kit" as seen from the indoor unit.
(*3) This can be extended to 295 ft with a replacement outdoor unit PCB.
(*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

Outside unit multi connection piping kit and Refrigerant branch kit selection

· Refrigerant branch kits can only be used with R410A.
· When multi outdoor system are installed, be sure to use the special separately sold Outside unit multi connection piping kit. (BHFP26P90U).
(For how to select the proper kit, follow the table at right.)
· Never use BHFP26M90U, BHFP22M90U for M type of this series or T joint (field supplyed).

How to select the REFNET joint

When using REFNET joint at the first branch counted from the outside unit side, choose from the following table in accordance with the outside unit capacity type.
(Example : REFNET joint A)

Outside unit capacity type	Refrigerant branch kit name
REYQ72 · 96PA type	KHRP25A33T
REYQ120~168PA type	KHRP25M72TU
REYQ192~240PA type	KHRP25M73TU

● Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
× < 72	KHRP25A22T	KHRP26A22T
72 ≤ × < 111	KHRP25A33T	KHRP26A33T
111 ≤ ×	KHRP25M72TU	KHRP26M72TU
162 ≤ ×	KHRP25M73TU	KHRP26M73TU

How to select the REFNET header

● Choose from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
× < 72	KHRP25M33H	KHRP26M22H or KHRP26M33H
72 ≤ × < 111		KHRP26M33H
111 ≤	KHRP25M72H	KHRP26M72H
162 ≤ ×	KHRP25M73TU	KHRP26M73TU

How to select the outside unit multi connection piping kit
(This is required when the system is multi outside unit system.)

● Choose from the following table in accordance with the number of outside units.

Number of outside unit	Connecting piping kit name
2 units	BHFP26P90U

Example for indoor units connected downstream

Example REFNET joint C : Indoor units 5 + 6 + 7 + 8

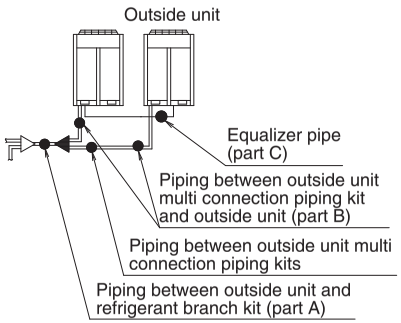
Example REFNET joint B : Indoor units 7 + 8
Example REFNET header : Indoor units 1 + 2 + 3 + 4 + 5 + 6

Example REFNET header :
Indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

⚠ The thickness and material shall be selected in accordance with local code.

For an outside unit installation, make the settings in accordance with the following figure.


Outside unit
Equalizer pipe (part C)
Piping between outside unit multi connection piping kit and outside unit (part B)
Piping between outside unit multi connection piping kits
Piping between outside unit and refrigerant branch kit (part A)

Piping between outside unit(*2 and refrigerant branch kit (partA)

● Choose from the following table in accordance with the outdoor units system capacity type.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REYQ72PA	ϕ3/4	ϕ5/8	ϕ3/8
REYQ96PA	ϕ7/8	ϕ3/4	
REYQ120PA	ϕ1-1/8	ϕ7/8	ϕ1/2
REYQ144PA			
REYQ168PA			ϕ5/8
REYQ192PA~216PR		ϕ1-1/8	
REYQ240PR	ϕ1-3/8		

Piping between outside unit multi connection piping kit and outside unit (part B)

● Choose from the following table in accordance with the capacity type of the outside unit connected.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REMQ72 · 96PA	ϕ7/8	ϕ3/4	ϕ3/8
REMQ120PR	ϕ1-1/8		ϕ1/2

Piping between refrigerant branch kits
Piping between refrigerant branch kit and Branch Selector unit
Piping between Branch Selector unit and refrigerant branch kit

● Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

*1 Connection piping must not exceed the refrigerant Piping size between outside unit and refrigerant branch kit (part A)

*2 When selecting 2 pipes line(gas pipe and liquid pipe), use Suction gas pipe column for gas pipe and Liquid pipe column for liquid pipe.

(unit : in.)

Indoor capacity index	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
× < 54	ϕ5/8	ϕ1/2	ϕ3/8
54 ≤ × ≤ 72	ϕ3/4	ϕ5/8	
72 ≤ × ≤ 111	ϕ7/8	ϕ3/4	
111 ≤ × < 162	ϕ1-1/8		ϕ1/2
162 ≤ ×		ϕ1-1/8	ϕ5/8

Piping between refrigerant branch kit, Branch Selector unit and indoor unit.

● Match to the size of the connection pipng on the indoor unit.

(unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	gas pipe	Liquid pipe
07 · 09 · 12 · 18	ϕ1/2	ϕ1/4
24 · 30 · 36 · 48	ϕ5/8	ϕ3/8

Equalizer pipe (part C) (outside multi system only)

(unit : in.)

Piping size (O. D.)	ϕ3/4

How to calculate the additional refrigerant to be charged

[HEAT RECOVER SYSTEM]

Additional refrigerant to be charged : R(lb)
(R should be rounded off in units of 0.1 lb.)

$$R = \left(\begin{array}{l} (\text{Total length (ft) of liquid piping size at } \phi 7/8) \times 0.249 + (\text{Total length (ft) of liquid piping size at } \phi 3/4) \times 0.175 \\ + (\text{Total length (ft) of liquid piping size at } \phi 5/8) \times 0.121 + (\text{Total length (ft) of liquid piping size at } \phi 1/2) \times 0.081 \\ + (\text{Total length (ft) of liquid piping size at } \phi 3/8) \times 0.040 + (\text{Total length (ft) of liquid piping size at } \phi 1/4) \times 0.015 \end{array} \right) \times 1.02 +$$

HEAT RECOVER SYSTEM	
MODEL NAME	THE AMOUNT OF REFRIGERANT
REYQ72 ~ 120PAYD	7.9 lb
REYQ72 ~ 120PATJ	
REYQ144 ~ 192PAYD	2.2 lb
REYQ144 ~ 192PATJ	
REYQ216 ~ 240PATJ	3.3 lb

+

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
INDOOR CONNECTION CAPACITY	MODEL NAME
	REYQ72 ~ 192PAYD REYQ72 ~ 192PATJ
MORE THAN 100% 120% OR LESS	1.1 lb
MORE THAN 120% 130% OR LESS	1.1 lb

Example for refrigerant branch using REFNET joint and REFNET heder for systems and each pipe length as shown below.

Outside system : REYQ240PAYD
Total capacity of indoor unit : 116%

a : ϕ3/4 × 15ft.	e : ϕ3/8 × 5ft.	i : ϕ3/8 × 5ft.	m : ϕ3/8 × 10ft.	r : ϕ1/2 × 1ft.
b : ϕ3/4 × 10ft.	f : ϕ3/8 × 5ft.	j : ϕ3/8 × 5ft.	n : ϕ3/8 × 5ft.	s : ϕ3/8 × 1ft.
c : ϕ3/8 × 5ft.	g : ϕ3/8 × 5ft.	k : ϕ3/8 × 10ft.	o : ϕ1/4 × 5ft.	t : ϕ3/8 × 1ft.

$$R = (\boxed{25 \times 0.175} + \boxed{1 \times 0.121} + \boxed{1 \times 0.081} + \boxed{75 \times 0.040} + \boxed{10 \times 0.015}) \times 1.02 + \boxed{3.3} + \boxed{1.1}$$

a, b — u — r — c~n, s, t — o, p — REYQ240PAYD — 116%

$$= 11.182 \Longrightarrow \boxed{11.1\text{lb}}$$

Round off in units of 0.1 lb.

Note 1.

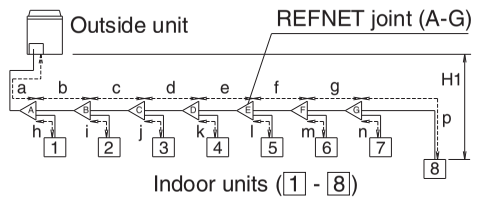
When the equivalent pipe length between outside and indoor units is 295 ft or more, the size of main pipes on the liquid side (refer to figure 15) must be increased according to the right table.
(Never inxrease suction gas pipe and HP/LP gas pipe.)

System	Liquid pipe
REYQ72PA type	ϕ3/8 > ϕ1/2
REYQ96PA type	ϕ1/2 > ϕ5/8
REYQ120PA type	ϕ5/8 > ϕ3/4
REYQ144PA type	
REYQ1684PA type	
REYQ192PA type	
REYQ216PA type	
REYQ240PA type	

(Refer to figure 15)
1.Outdoor unit
2.Main pipes
3.Increase only liquid pipe size
4.First refrigerant branch kit
5.Branch Selector unit
6.Indoor unit

Note 2.

Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings	
1. It is necessay to increase the pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size.	8 b+c+d+e+f+g+p ≤ 295 ft. increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows ϕ3/8 > ϕ1/2 ϕ5/8 > ϕ3/4 ϕ7/8 > ϕ1* ϕ1-3/8 > ϕ1-1/2* ϕ1/2 > ϕ5/8 ϕ3/4 > ϕ7/8 ϕ1-1/8 > ϕ1-1/4*
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	a+b×2+c×2+d×2+e×2+f×2+g×2 +h+i+j+k+l+m+n+p ≤ 3280 ft.	
3. Indoor unit to the nearest branch kit ≤ 130 ft.	h, i, j..... p ≤ 130 ft.	
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 130 ft.	The farthest indoor unit 8 The nearest indoor unit 1 (a+b+c+d+e+f+g+p)-(a+h) ≤ 130 ft.	

* If the specified pipe diameter is not available onsite, do NOT substitute with a pipe of greater diameter.

7. FIELD WIRING

NOTE

- All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after switching off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect ground and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.
  Gas pipes : can explode or catch fire if there is a gas leak.
  Sewage pipes : no grounding effect is possible if hard plastic piping is used.
  Telephone ground wires and lightning rods : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.
- Be sure to install a ground leakage circuit breaker.
  This unit uses an inverter, so install the ground leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the ground leakage circuit breaker itself.
- Ground leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed.
  (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring.
  (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off when the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Attach the power wire securely.
- Never connect the power supply in reversed phase.
  The unit can not operate normally in reversed phase.
  If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced.
  If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and ground terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

7-1 Power circuit, safety device and cable requirements

- A power circuit (see the following table) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and a ground leakage circuit breaker.
- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Recommended Max Overcurrent Protection	Transmission line selection
REYQ72PAYD	ϕ 3, 60Hz	460V	16.0A	20A	AWG18-16
REYQ96PAYD	ϕ 3, 60Hz	460V	20.4A	25A	AWG18-16
REYQ120PAYD	ϕ 3, 60Hz	460V	20.5A	25A	AWG18-16
REYQ144PAYD	ϕ 3, 60Hz	460V	16.7+16.7A	25A+25A	AWG18-16
REYQ168PAYD	ϕ 3, 60Hz	460V	16.7+20.3A	25A+25A	AWG18-16
REYQ192PAYD	ϕ 3, 60Hz	460V	20.3+20.3A	25A+25A	AWG18-16
REYQ216PYDNR	ϕ 3, 60Hz	460V	20.5+20.3	25A+30A	AWG18-16
REYQ240PYDNR	ϕ 3, 60Hz	460V	20.5+20.5	30A+30A	AWG18-16

	Phase and frequency	Voltage	Minimum circuit amp.	Recommended Max Overcurrent Protection	Transmission line selection
REYQ72PATJ	ϕ 3, 60Hz	208-230V	36.1A	40A	AWG18-16
REYQ96PATJ	ϕ 3, 60Hz	208-230V	43.8A	45A	AWG18-16
REYQ120PATJ	ϕ 3, 60Hz	208-230V	44.2A	50A	AWG18-16
REYQ144PATJ	ϕ 3, 60Hz	208-230V	28.8+28.8A	40A+40A	AWG18-16
REYQ168PATJ	ϕ 3, 60Hz	208-230V	28.8+36.1A	40A+50A	AWG18-16
REYQ192PATJ	ϕ 3, 60Hz	208-230V	36.1+36.1A	50A+50A	AWG18-16
REYQ216PTJUR	ϕ 3, 60Hz	208-230V	36.1+41.3	50A+60A	AWG18-16
REYQ240PTJUR	ϕ 3, 60Hz	208-230V	41.3+41.3	60A+60A	AWG18-16

7-2 Wiring Connection Example for Whole System

(Refer to figure 16)

1. Power supply
2. Main switch
3. Ground leakage circuit breaker
4. Fuse
5. Outside unit
6. COOL/HEAT selector
7. Remote controller
8. Indoor unit
9. Branch Selector unit

NOTE

- Make sure the communication/control wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. apart.
  Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described in "**7-5 Power Wiring Connection Procedure**".
- Transmission wiring should be secured as described in "**7-4 Transmission Wiring Connection Procedure**".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.

7-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the sides, the front (knock hole) or the bottom frame (knock hole)
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit or from a piping hole.

(Refer to figure 17-1)
1. Electric wiring diagram
   Printed on the back of the electrical components box lid.
2. Knockout hole
3. Power line
4. Transmission line

(Refer to figure 17-2)
1. Electrical components box lid
2. Service lid
3. [Service precautions] Label location

⚠ NOTE

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
  (Refer to figure 17-1, 2)
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.
  (Refer to figure 17-1, 2)
- If small animals might enter the unit, block off any gaps (hatching parts in figure 17-1, 2) with material (field supply).

7-4 Transmission Wiring Connection Procedure

- Referring to figure 18 connect the transmission wiring between outside unit and indoor unit, outside unit and outside unit of other system, outside unit and outside unit of same system.

(Refer to figure 18)
1. Electrical components box (1)
2. Electrical components box (2)
3. Do not open the electrical components box (2) lid.
   (There are no work when installation)
4. Never connect the power wire.
5. To outside unit of other system
6.
7. Branch Selector unit
8. Indoor unit
9. Indoor unit (Cooling only)

⚠ NOTE

- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.
  See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol [1] ~ [2], **see figure 18**) should be done within the following limitations.
  If they are exceeded, transmission problems may occur.

  [1] Between outside unit and Branch Selector (or indoor) unit
  Between Branch Selector unit and indoor unit
  Between outside unit and outside unit of other systems
  Max. wiring length : 3280 ft
  Max. total wiring length : 6560 ft
  Max. no. of branches : 16
  [Note]
  No branch is allowed after branch (**See figure 19**)
  Max. no. of outside units of other system
  that can be connected : 10

(Refer to figure 19)
1. Branch
2. Branch after branch

  [2] Between outside unit and outside unit of same system
  Max. wiring length : 100 ft

- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 20.

(Refer to figure 20)
1. In the electrical components box
2. Retain to the electrical components box with the accessory clamp (1).
3. Vinyl tube (accessory)

- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 21.

(Refer to figure 21)
1. Suction gas pipe
2. HP/LP gas pipe
3. Liquid pipe
4. Insulation material
5. Finishing tape
6. Transmission wiring

- Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the electrical components box(1).

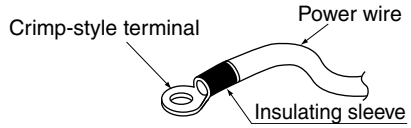
7-5 Power Wiring Connection Procedure

- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 22.
- The L1, L2, L3 and N phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

(Refer to figure 22)
1. Power supply
   (MODEL PAYD:3~460V 60Hz)
   (MODEL PATJ:3~208-230V 60Hz)
2. Ground leakage circuit breaker
3. Branch switch, ground leakage circuit breaker
4. Ground wire
5. Electrical components box (1)
6. Electrical components box(2)
7. Do not open the electrical components box (2) lid.
   (There are no work when installation)
8. Attach insulation sleeves
9. Power supply terminal block
10. Ground terminal
11. Clamp (1) (accessory)
12. Vinyl tube (accessory)

⚠ CAUTION

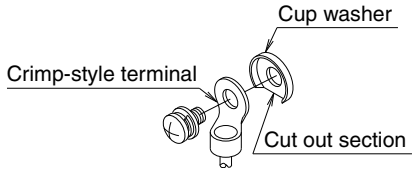
- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)



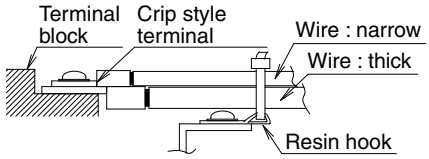
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
  See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

- When pulling the ground wire out, wire it so that it comes through the cut out section of the cup washer. (See the figure below.) An improper ground connection may prevent a good ground from being achieved.



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



7-6 Procedure for Wiring Inside Units

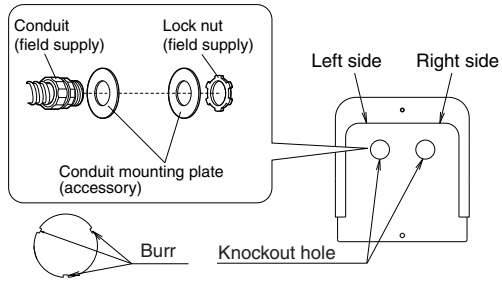
- Referring to figure 23, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring.
  If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 inches away from the power wiring.
- Make sure all wiring does not contact to the pipes (hatching parts in the figure 23).
-

(Refer to figure 23)

1. Secure to the hook of column support using the accessory calmp (1).
2. Electric conduit
3. When routing out the power/ground wires from the left side.
4. When routing out the transmission wiring from the opening for piping.
5. When routing out the power/ground wires from the front.
6. Clear over 2 inches.
7. When routing out the transmission wiring from the knockout hole.
8. When routing out the power/ground wires from the right side.
9. Power wiring
10. Ground wire
11. Transmission wiring
12. When wiring, exercise sufficient caution not to detach the acoustic insulators from the compressor.
13. Secure to the back side of the support beam using the accessory clamp (1).
14. Retain to the back of the column support with the accessory clamp (2).

Precautions when knocking out knockout holes

- To punch out a knockout hole, hit it with a hammer.
- Open an appropriate hole as needed.
- After knocking out the holes trim off the burr, then we recommend you to paint the edges and areas around the edges using the repair paint to prevent rusting.
- Power line : Open a knockout hole as shown at left and connect it using a conduit.
- Transmission line : Connect it using a conduit in the knockout hole on the right.



NOTE

- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

8. AIR TIGHT TEST AND VACUUM DRYING

- After finishing piping work, carry out airtight test and vacuum drying.

NOTE

- Always use dry nitrogen gas for the airtightness test.
- Absolutely do not open the shutoff valve until the main power ciruit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

<Needed tools>

Gauge manifold Charge hose valve	• To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A. • Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.
Vacuum pump	• The vacuum pump for vacuum drying should be able to lower the pressure to below 500 microns. • Take care the pump oil never flows backward into the refrigerant pipe during the pump stops.

<The system for air tight test and vacuum drying>

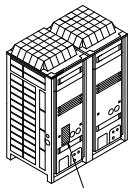
- Referring to figure 25, connect a dry nitrogen tank, refrigerant tank, and a vacuum pump to the outside unit.
  The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 24 are needed in **"11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION"**.

(Refer to figure 24)

1. Gauge manifold
2. Nitrogen
3. Measuring device
4. R410A tank (with siphon)
5. Vacuum pump
6. Charge hose
7. Refrigerant charge port
8. HP/LP gas pipe shutoff valve
9. Suction gas pipe shutoff valve
10. Liquid pipe shutoff valve
11. Valve A
12. Valve B
13. Valve C
14. Outside unit
15. To Branch Selector (or indoor) unit
16. Shutoff valve
17. Service port
18. Field piping
19. Gas flow

NOTE

- The air-tightness test and vacuum drying should be done using the service ports of equalizer pipe, HP/LP gas pipe, suction gas pipe and liquid pipe shutoff valve.
  See the [R410A] Label attached to the front plate of the outside unit for details on the location of the service port (see figure at right)


[R410A] Label

- See **[Shutoff valve operation procedure]** in **"11-1 Before working"** for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe.
  When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.

<Air tight test>

Pressurize the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test.
If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

NOTE

<Vacuum drying> Do not energize the indoor unit before performing the vacuum drying.

A triple evacuation is recommended; note that this is basic refrigeration best practice and not specific to Daikin. The refrigerant gauges should be connected to the liquid, HP/LP and suction gas pipes and a triple evacuation performed. Break the first and second vacuum with dry nitrogen. The final evacuation should be to below 500 microns and a rise test conducted; the system should hold below 500 microns for at least one hour.

9. PIPE INSULATION

- Insulation of pipes should be done after performing "**8. AIR TIGHT TEST AND VACUUM DRYING**".
- Always insulate the liquid piping, the HP/LP gas piping, the gas piping, and these pipe connections.
  Failing to insulate the pipes may cause leaking or burns.
  Especially, be sure to insulate the HP/LP gas piping as withstanding as the suction pipe because the suction gas follows in the HP/LP gas piping when the system is whole cooling mode.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..
  - If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in..
    See the Engineering data book for detail.
- If there is a possibility that condensation on the shutoff valve might drip down into the indoor unit through gaps in the insulation and piping because the outside unit is located higher than the indoor unit, etc., this must be prevented by caulking the connections, etc. **(Refer to figure 25)**
- The piping lead-out hole lid should be attached after opening a knock hole. **(Refer to figure 26)**
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of "**11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION**". **(Refer to figure 29)**

(Refer to figure 25)

1. Insulation material
2. Caulking, etc.

(Refer to figure 26)

1. Piping lead-out hole lid
2. Open a knock hole at " ▨ ".
3. Block " ▨ ".

NOTE

- After knocking out the holes, we recommend you remove burrs in the knock holes (**See figure 26**) and paint the edges and areas around the edges using the repair paint.

10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS

Be sure to check the followings.

For those doing electrical work

1. Make sure there is no faulty transmission wiring or loosing of a nut.
   See "**7-4 Transmission Wiring Connection Procedure**".
2. Make sure there is no faulty power wiring or loosing of a nut.
   See "**7-5 Power Wiring Connection Procedure**".
3. Has the insulation of the main power circuit deteriorated?
   Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

For those doing pipe work

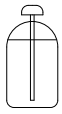
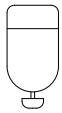
1. Make sure piping size is correct.
   See "**6-1 Selection of piping material and Refrigerant branching kit**".
2. Make sure insulation work is done.
   See "**9. PIPE INSULATION**".
3. Make sure there is no faulty refrigerant piping.
   See "**6. REFRIGERANT PIPING**".

11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION

The outside unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.
For charging the additional refrigerant, follow the procedure in this chapter.
And then carry out the check operation.

11-1 Before working

[About the refrigerant tank]
Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form.
(See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

NOTE

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

[Shutoff valve operation procedure]
When operating the shutoff valve, follow the procedure instructed below.

NOTE

- Do not open the shutoff valve until **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.
  The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

Tightening torque

The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

<Size of Shutoff Valve>

	72PA type	96PA type	120PA type
Liquid pipe shutoff valve	ϕ3/8 The 120PA type corresponds to the ϕ1/2 - diameter onsite piping using the accessory pipe.		
Suction gas shutoff valve	ϕ1 The 72PA type corresponds to the ϕ3/4 - diameter onsite piping using the accessory pipe. The 96PA type corresponds to the ϕ7/8 - diameter onsite piping using the accessory pipe. The 120PA type corresponds to the ϕ1-1/8 - diameter onsite piping using the accessory pipe.		
HP/LP gas shutoff valve	ϕ3/4		

(Refer to figure 27)

1. Service port
2. Cap
3. Hex holes
4. Shaft (valve body)
5. Seal section

To open

1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

To close

1. Remove the cap and turn the shaft clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

<Tightening torque>

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)			
	Shaft (valve body)		Cap (valve lid)	Service port
ϕ 3/8	3.98 - 4.87	Hexagonal wrench 4mm	9.95 - 12.17	8.48 - 10.3
ϕ 1/2	5.97 - 7.30		13.3 - 16.2	
ϕ 3/4	19.9 - 24.3	Hexagonal wrench 8mm	16.6 - 20.3	
ϕ 1				

[How to Check How Many Units are Connected]

It is possible to find out how many indoor or outside unit in the system are turned on by operating the push button on the PC-board (A1P) of outside unit.

Follow the procedure below to check how many indoor or outside units are turned on.

(LED display: ● ...OFF ☼ ...ON ◑ ...Blinking ＊...Uncertain)		LED display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at **Setting Mode 1** (H1P : off), and set the MONITOR MODE (H1P : Blinking).		◑	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outside units : eight times	◑	●	●	☼	●	●	●
	For checking the number of indoor units : five times	◑	●	●	●	☼	●	☼
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ◑ standing for "1" and ● standing for "0".		◑	＊	＊	＊	＊	＊	＊
Ex: For the LED display at right, this would be "0 1 0 1 1 0 ", which would mean 22 units are connected. 32 × **0** + 16 × **1** + 8 × **0** + 4 × **1** + 2 × **1** + 1 × **0** = 22 units Note: "000000" indicates 64 units.		◑	●	◑	●	◑	◑	●
(4) Press the MODE button (BS1) once. This returns to **Setting Mode 1** (H1P : OFF, default).		●	●	☼	●	●	●	●

NOTE

Press the "MODE button" (BS1) if you get confused while operating. This returns to **Setting Mode 1** (H1P : OFF, default).

11-2 Procedure of Adding Refrigerant charging and check operation

WARNING Electric Shock Warning

- Make sure to close the electrical components box lid before turning on the power.
  which is in the electrical components box lid.

- Perform the setting on the PC-board (A1P) of the outside unit and check the LED display after the power is on via the inspection door

(Refer to figure 28)

1. Electrical components box (1) (right)
2. Inspection door
3. Electrical components box (2) (left)
4. Do not open the electrical components box (2) (left) lid or that inspection door.
5. Electrical components box (1) (right) lid
6. LED (H1~8P)
7. Push button (BS1~5)
8. Lift the protruding part to open the inspection door.

- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.
  There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

⚠ CAUTION

- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the Branch Selector, and indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.
  After the outside unit stops operating, the fan may keep rotation for a while.

⚠ NOTE

- If operation is performed within 12 minutes after the Branch Selector, indoor and outside units are turned on, H2P will be lit on and the compressor will not operate.

  Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.
  When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.
  The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.
  The refrigerant charge port of this product have electric expansion valve.
  The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, nomal operation, etc.).
  If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.
- Make sure to perform the check operation after installation. Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.
  And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.
  Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.
  About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

11-2-1 Procedure of Adding Refrigerant charging

1. Make sure the following works are complete in accordance with the installation manual.
   - Piping work
   - Wiring work
   - Air tight test
   - Vacuum drying
   - Installation work for Branch Selector and indoor unit
2. Calculate the "additional charging amount" using "How to calculate the additional refrigerant to be charged" in **"6-5 Example of connection"**. Be sure to note the additional charge amount on the refrigerant charge label.
3. Open the valve B (**See the figure 29**. The valve A,C and the liquid pipe, suction gas pipe, HP/LP gas pipe, equalizer pipe shutoff valves must be left closed), and charge the refrigerant of the "additional charging amount" from the liquid side shutout valve service port.

   (Refer to figure 29)

   1. Measuring device
   2. R410A tank (with siphon)
   3. Charge hose
   4. Refrigerant charge port
   5. HP/LP gas pipe shutoff valve
   6. Suction gas shutoff valve
   7. Liquid pipe shutoff valve
   8. Valve A
   9. Valve B
   10. Valve C
   11. Outside unit
   12. To Branch Selector, indoor unit
   13. Field pipings
   14. Refrigerant flow
   15. Shutoff valve
   16. Service port
4. If the "additional charging amount" was charged fully, close the valve B and go to step 6.
   If the "additional charging amount" was not charged fully, close the valve B and go to step 5.
5. Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the "additional charging amount".

⚠ NOTE

- For performing the automatic refrigerant charging operation, the push button on the PC-bord (A1) of outside unit are used. (See figure 28.)
  And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 30.) For operating the push button and opening or closeing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

  Outdoor temp. : 32˚F DB ~ 109˚F DB
  Indoor temp. : 50˚F DB ~ 90˚F DB
  → Cooling mode

  Less than above range → Heating mode

  When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.
  During charging in heating mode, a person must manually close valve A and stop operation.
  Beforehand, check the remaining refrigerant that is needed to charge based on the "additional charging amount" in step 2 and the charged amount in step 3.
- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcedly by pushing MODE button (BS1).

(Refer to figure 30)

1. Measuring device
2. R410A tank (with siphon)
3. Charge hose

4. Refrigerant charge port
5. HP/LP gas pipe shutoff valve
6. Suction pipe shutoff valve
7. Liquid pipe shutoff valve
8. Valve A
9. Valve B
10. Valve C
11. Outside unit
12. To Branch Selector, indoor unit
13. Field pipings
14. Refrigerant flow when charging
15. Shutoff valve
16. Service port

[Automatic refirgerant charging operation procedure]

NOTE

- The marks of LED mean as follows.
  ● : OFF ☼ : ON ◑ : Blinking ＊ : OFF, ON or Brinking

(1) Open the liquid pipe, suction gas pipe and HP/LP gas pipe shutoff valves. (The valve A~C must be closed. See figure 30.)
(2) • Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (*1) And turn the power to the outdoor unit and all connected Branch Selector, indoor units. (*2)
  • After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF.
  If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
(3) Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

(4) Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	☼	☼	☼	☼	☼	☼

(5) Hold the TEST button (BS4) down for 5 seconds or more.
(The LED displays will change as below and fan of outside unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	◑	●	●	●	＊	＊

(6) When the compressor starts working and the LED displays change any state in below (*3), go to “In case of cooling mode” or “In case of heating mode” in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	
◑	◑	◑	●	☼	●	☼	➡ Go to “In case of cooling mode”
◑	◑	●	●	☼	●	☼	➡ Go to “In case of heating mode”

—In case of cooling mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels (*5).
After that, open the valve A immediately (See figure 30) (*6) and watch the remote controller display of indoor unit.
(8) If the remote controller display shows “PE” code (*7), ready to close the valve A.
And go to procedure (9).
If the remote controller display shows other code, close the valve A immediately and refer to [Remote controller cooling mode malfunction code]

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(9) When the compressor stop working (the fan may continue rotation.), close the valve A immediately (*8).
And check the LED displays are as below and the remote controller display shows “P9” code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	◑	◑	☼	☼	☼	☼

After checking, push the MODE button (BS1) once and the charging is complete.

—In case of heating mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels.
After that, open the valve A immediately (See figure 30) (*6) and check the charged amount by meauring device.
During operation, if the remote controller display shows “P2” or “P8” code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(8) When the required amount of refrigerant is charged, close the valve A (See figure 30) (*8) and push the RETURN button (BS3) once. And then go to procedure (9).
(9) Push the MODE button (BS1) once, and the charging is complete.

Notes (*1)~(*9)
(*1) Lead the refrigerant charge hose etc from the pipe intake.
All front panels must be closed at the procedure (7).
(*2) • If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.
Check the number of outside and indoor units that is powered.
For checking, see [How to check how many units are connected] in chapter 11-1.
  • To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
(*3) It takes about 2~10 minutes for getting stability of refrigerant state.
If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
(*4) If the TEST button (BS4) is not pushed within 5 minutes, “P2” code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
(*5) If the front panel is opened during the operation, the system cannot operate properly.
(*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and “P2” code are displayed in remote controller.
In this case, refer [Remote controller cooling (or heating) mode malfunction code].

(*7) Depending on the situation of operation such as the charging amount is little, the “PE” code may not be displayed and the “P9” code may be displayed.
(*8) Always close the valve A and take the tank off.
The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when ather operation (Check operation, nomal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

[Remote controller cooling mode malfunction code]

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. ⚠ Beware the fan running. The outside unit does not stop operation.	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.	After correcting the abnormality, restart the operation from procedure (3).
*	Operation is stoped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	

[Remote controller heating mode malfunction code]

Code	The work contents
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of “In case of heating mode”.
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.

6. After completing the additional refrigerant charging, record the charging amount on the accessory “REQUEST FOR THE INDICATON” label (Installation records) and adhere it to the back side of the front panel.

11-2-2 Procedure of check operation

- Check operation perform the following work. Do the check operation following below.
  Otherwise, malfunction code “U3” will be displayed in the remote controller and nomal operation can not be carried out.
  - ■ Check of shutoff valve opening
  - ■ Check of miswiring
  - ■ Judgment of piping length
  - ■ Check of refrigerant overcharge

⚠ NOTE

- Check operation can not carried out at outdoor temp. less than 23°F.
  Perform the check operation at day or time that outdoor temp. is 23°F or more.

[Check Operation Procedure]

(1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outside unit and all connected Branch Selector, indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)
(2) Make the onsite settings as needed using the push button (BS1-BS5) on the outside unit PC-board (A1P) with the power on. (See **“12 Onsite Settings”**)
(3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the electrical components box lid. (See figure 31) The system operation for about 40~60 minutes and automatically stops the check operation.
If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

(Refer to figure 31)

1. Electrical components box (1) lid
2. Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

⚠ NOTE

For interrupting the check operation, push RETURN button (BS3).

[Remote controller displays malfunction code]

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outside unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outside unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outside, Branch Selector or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outside, Branch Selector or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	• Check if the additional refrigerant charge has been finished correctly. • Recalculate the additional amount refrigerant from the piping length and add the adequate amount.
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1,Q2)" terminal on the outside unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the “TO MULTI UNIT (Q1, Q2)” terminal.

⚠ NOTE

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

12. ONSITE SETTINGS

NOTE

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid.
The outside unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.
Use the push button switches (BS1 through BS5) on the outside unit PC-board (A1P) to make the necessary onsite settings.
See the “Service Precautions” label (upper) on the electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting.
Make sure to record the setting on the accessory “REQUEST FOR THE INDICATION” label.
Use an insulated rod to operate the push buttons via the inspection door of electrical components box lid.
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

13. TEST RUN

13-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the Branch Selector and indoor unit are finished and there are no danger to operate.

13-2 Test Run

After all works are completed, operate the unit normally and check the following.
(1) Make sure the indoor and outside units are operating normally.
(2) Operate each indoor unit one by one and make sure the corresponding outside unit is also operating.
(3) Check to see if cold (or hot) air is coming out from the indoor unit.
(4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

NOTE

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- The outside unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first istallation, the malfunction code “U3” will be displayed in the remote controller. Perform the check operation following **“11-2-2 Procedure of Check Operation©**.

13-3 Checks After Test Run

Perform the following checks after the test run is complete.Record the contents of field setting.

→ Record them on the accessory “REQUEST FOR THE INDICATION” label.
And attach the label on the back side of the front panel.

- Record the installation date.

→ Record the installation date on the accessory “REQUEST FOR THE INDICATION” label in accordance with the IEC60335-2-40.
And attach the label on the back side of the front panel.

NOTE

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

14. CAUTION FOR REFRIGERANT LEAKS

(Points to note in connection with refrigerant leaks)

Introduction:

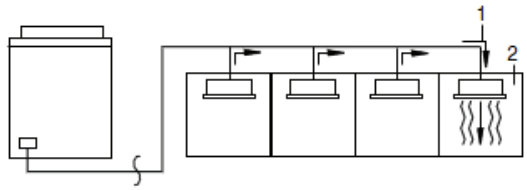
The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb/ft^3 (the weight in lb of the refrigerant gas in 1 ft^3 volume of the occupied space). Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1–2 below and take whatever action is necessary to comply.

1. Calculate the amount of refrigerant (lb) charged to each system separately.

amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb) in the system

NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).

5.3 REYQ144~192 PAYD / REYQ216~240PYDNR (Heat Recovery, 460V) REYQ144~192 PATJ / REYQ216~240PTJUR (Heat Recovery, 208-230V)

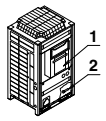


figure 1

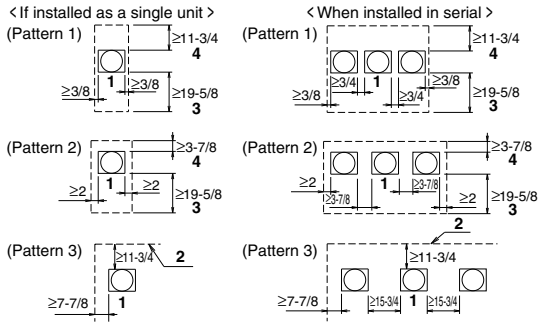


figure 2

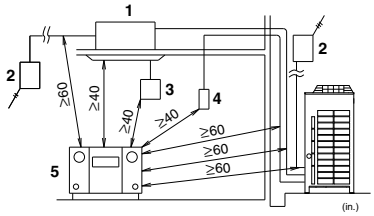


figure 3

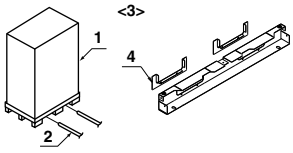


figure 4

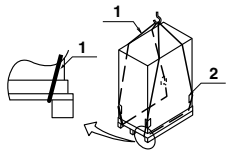
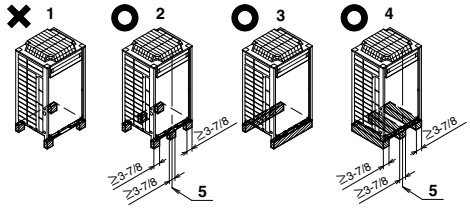


figure 5



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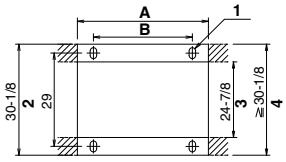

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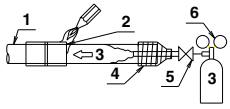
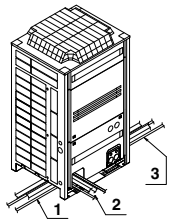


figure 8



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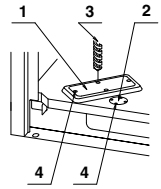

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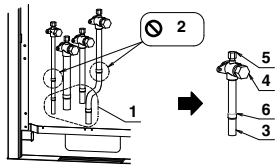
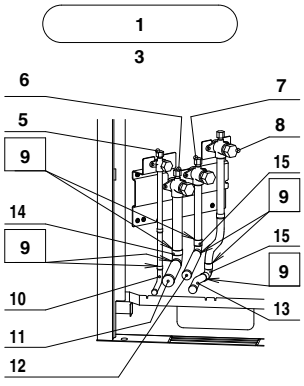


figure 11



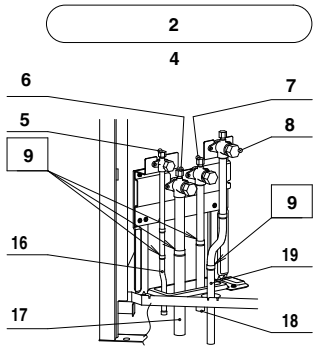


figure 12

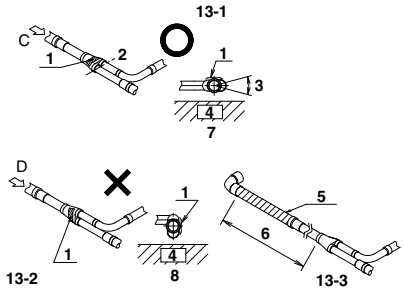


figure 13

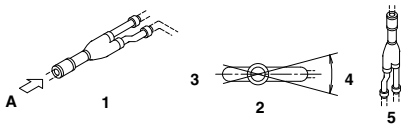


figure 14

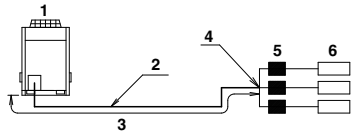


figure 16

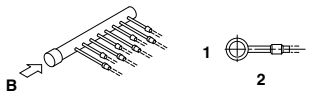


figure 15

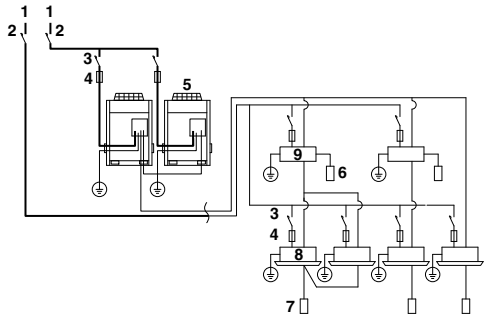


figure 17

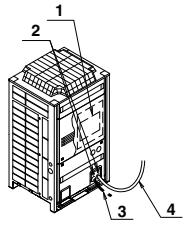


figure 18-1

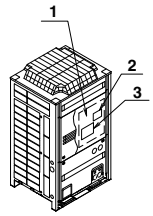


figure 18-2

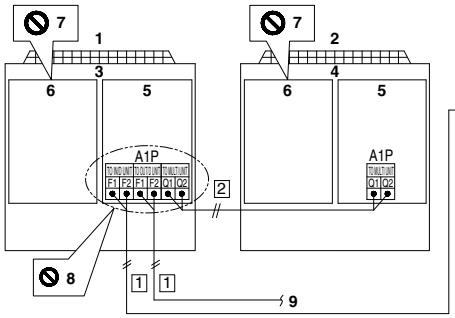


figure 19

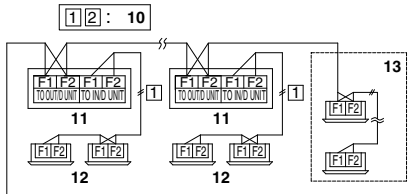
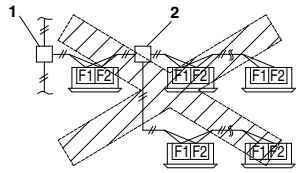
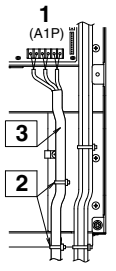


figure 20





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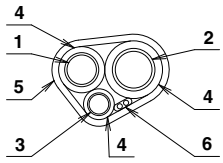

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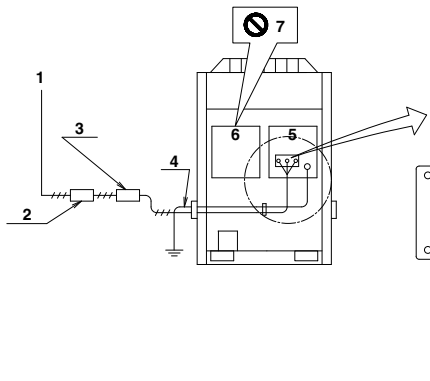

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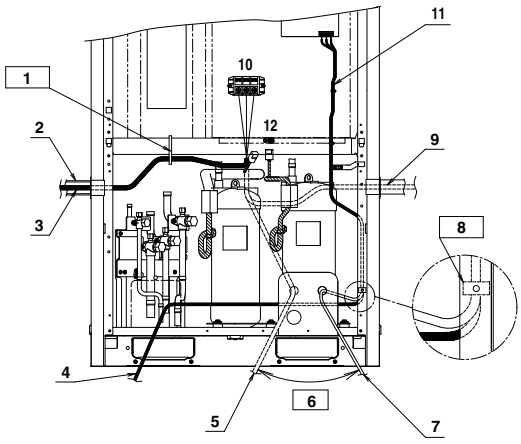

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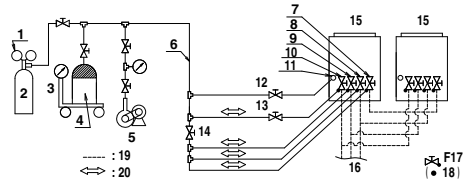

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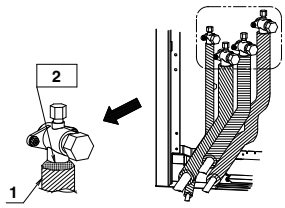

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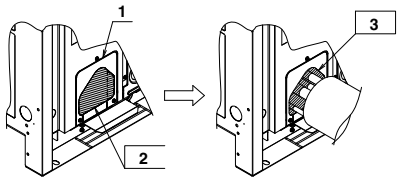

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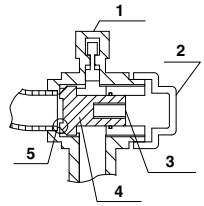

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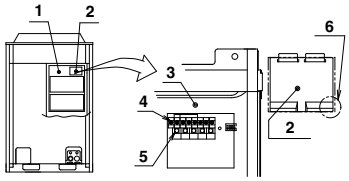

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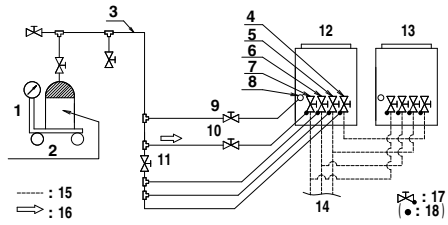

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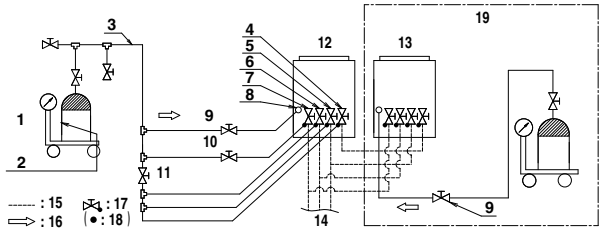

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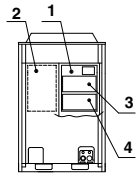


figure 32

1. FIRST OF ALL

- This document is an installation manual for the Daikin REYQ-PA Series VRV Inverter. Before installing the unit, read this manual thoroughly, following the instructions contained in it.
  After installation, do a test run to make sure the unit runs properly, and then explain how to operate and take care of the unit to the customer, using the operation manual.
  Lastly, make sure the customer keeps this manual, along with the operation manual, in a safe place.

1-1 Safety considerations

Read these "SAFETY CONSIDERATIONS for Installation" carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
It may also be used to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**
- **When wiring, position the wires so that the terminal box lid can be securely fastened. Improper positioning of the terminal box lid may result in electric shocks, fire, or the terminals overheating.**
- **Before touching electrical parts, turn off the unit.**
- **Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.**
- **Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.**
- **When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**
- **Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.**

⚠ CAUTION

- **Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.**
- **Do not allow children to play on or around the unit to prevent injury.**
- **Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.**
- **Heat exchanger fins are sharp enough to cut.
  To avoid injury wear glove or cover the fins when working around them.**
- **Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.**
- **Insulate piping to prevent condensation.**
- **Be careful when transporting the product.**
- **Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.**

- **Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.**
- **Refrigerant R-410A in the system must be kept clean, dry, and tight.**
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping and follow the procedures.
- **Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.**
- **The indoor unit is for R-410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.**
- **Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.**
- **Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.**
- **Do not install the air conditioner in the following locations:**
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves.
  Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled.
  Operating the unit in such conditions can cause a fire.
- **Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.**

⚠ NOTE

- **Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.**
- **Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.**
- **If the conventional refrigerant and refrigerator oil are mixed in R-410A, the refrigerant may deteriorate.**
- **This air conditioner is an appliance that should not be accessible to the general public.**
- **The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

1-2 Special notice of product

[CLASSIFICATION]
This air conditioner comes under the term "appliances not accessible to the general public".

[REFRIGERANT]
VRVIII System use R410A refrigerant.
- The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.
  Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.
  A. Clean and dry
  Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.
  B. Tight
  Take care to keep the system tight when installing.
  R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation.
  R410A can contribute slightly to the greenhouse effect if it is released.
- Since R410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.

[DESIGN PRESSURE]
Since design pressure is 478 psi, the wall thickness of pipes should be more carefully selected in accordance with the relevant local and national regulations.

1-3 Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

2. INTRODUCTION

- REYQ-PA series are designed for outdoor installation and used for cooling and heating applications.
- The Branch Selector units that combined with REYQ-PA system for changing the refrigerant flow to indoor units are BSVQ36 · 60 · 96P type only. To combine with other type Branch Selector unit will cause malfunction.
- The indoor units that combined with REYQ-PA system for air conditioning are Daikin VRV series indoor units that compatible with R410A. To learn which indoor units are compatible with R410A, refer to the product catalogs. To combine with other refrigerant indoor unit will cause malfunction.

2-1 Combination

The system name and that independent units are as follows.

〈The system name〉	〈Independent units〉	
REYQ144PAYD/PATJ	REMQ72PAYD/PATJ	REMQ72PAYD/PATJ
REYQ168PAYD/PATJ	REMQ72PAYD/PATJ	REMQ96PAYD/PATJ
REYQ192PAYD/PATJ	REMQ96PAYD/PATJ	REMQ96PAYD/PATJ
REYQ216PYDNR/PTJUR.....	REMQ96PAYD/PATJ	REMQ120PYDNR/PTJUR
REYQ240PYDNR/PTJUR.....	REMQ120PYDNR/PTJUR	REMQ120PYDNR/PTJUR

- The indoor units can be installed in the following range.

〈Outside unit〉	〈Total capacity index of indoor units〉
REYQ144PAYD/PATJ	86 ~ 187
REYQ168PAYD/PATJ	100.5 ~ 218
REYQ192PAYD/PATJ	115 ~ 249.5
REYQ216PYDNR/PTJUR	108 ~ 280.5
REYQ240PYDNR/PTJUR.....	120 ~ 312

- For installing the 2 units multi system, Outside unit multi connection piping kit "BHFP26P90U" are required.
- If the total capacity of the connected indoor units exceeds the capacity of the outside unit, cooling and heating performance may drop when running the indoor units. See the capacity table in the Engineering Data Book for details.

2-2 Standard supplied accessories

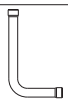
Confirm the following accessories are included. The storage location of the accessories is shown in figure 1.

NOTE

Do not throw away any of the accessories until installation is complete. They are needed for installation work.

Name	Clamp(1)	Clamp(2)	Clamp(3)	Vinyl tube
Quantity	8 pcs.	2 pcs.	1 pc.	4 pcs.
Shape	(Small)		(Large)	

Name	Conduit mounting plate		Manuals, etc.
Quantity	2 pcs.	2 pcs.	1 pc. about each item
Shape			· Operation manual · Installation manual · "REQUEST FOR THE INDICATON" label (Installation records) · Additional refrigerant charge label

Name		Liquid side accessory pipe (1)	Liquid side accessory pipe (2)	Suction gas side accessory pipe (1)	Suction gas side accessory pipe (2)	HP / LP gas side accessory pipe (1)
Quantity	72 · 96PA type	1 pc.	1 pc.	1 pc.	1 pc.	2 pcs.
Shape				f7/8	f7/8	f3/4

Name		Equalizer side accessory pipe (1)	L type accessory joint (1)	L type accessory joint (2)
Quantity	72 · 96PA type	1 pc.	1 pc.	2 pcs.
Shape			f1	f3/4

(Refer to figure 1)

1. Clamps, Manuals, etc.
2. Accessory pipes

2-3 Option accessory

To install the outside units, the following optional parts are also required. To select an optimum kit, refer to "**6. REFRIGERANT PIPING**".

- **Outside unit multi connection piping kit**

Number of outside units connected	2 units
Kit name	BHFP26P90U

- **Refrigerant branching kit**

	for 3 piping			
REFNET header	–	KHRP25M33H	KHRP25M72H	KHRP25M73HU
REFNET joint	KHRP25A22T	KHRP25A33T	KHRP25M72TU	KHRP25M73TU

	for 2 piping		
REFNET header	KHRP26M22H	KHRP26M33H	KHRP26M72H
REFNET joint	KHRP26A22T	KHRP26A33T	KHRP26M72TU

Make sure that any separately purchased accessories are designed for use with R410A.

2-4 Technical and Electrical specifications

Refer to the Engineering Data Book for the complete list of specifications.

2-5 Main components

For main components and function of the main components, refer to the Engineering Data Book.

3. SELECTION OF LOCATION

Select a location for installation that meets the following conditions and get the customer's permission.

1. Select the location of the unit in such a way that neither the discharged air nor the sound generated by the unit disturb anyone.
2. The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
3. The piping length between the outside unit and the indoor unit may not exceed the allowable piping length.
   (Refer to **"6. REFRIGERANT PIPING"**)
4. Locations where the unit's suction vent and outlet vent do not generally face the wind.
   Wind blowing directly into the suction or outlet vents will interfere with the unit's operation.
   If necessary, install some kind of obstruction to block the wind.
5. The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.
   (See the **"Installation Space Examples"** for the minimum space requirements.)

Installation Space Examples

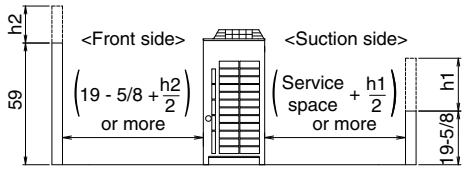
- The installation space requirement shown in figure 2 is a reference for cooling operation when the outdoor temperature is 95°F.
  If the design outdoor temperature exceeds 95°F or the heat load exceeds maximum capacity in all the outside unit, take an even larger space on the air intake than is in figure 2.
- During installation, install the units using the most appropriate of the patterns shown in figure 2 for the location in question, taking into consideration human traffic and wind.
- If the number of units installed is more than that shown in the pattern in figure 2, install the units so there are no short circuits.
- As regards space in front of the unit, consider the space needed for the local refrigerant piping when installing the units.
- If the work conditions in figure 2 do not apply, contact your dealer or Daikin directly.

(Refer to figure 2)

1. Front side
2. No limit to wall height
3. Service space of front side
4. Service space of suction side

For Patterns 1 and 2 in figure 2 :

- Wall height for front side – no higher than 59 in.
- Wall height on the suction side – no higher than 19-5/8 in.
- Wall height for sides – no limit.
- If the height is exceeded the above, calculate h1 and h2 shown in the figure below, and add h2/2 to the service space of front side and h1/2 to the service space of suction side.



DANGER

- **Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.**
- **Refrigerant gas in heavier air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
  Refer to the chapter "CAUTION FOR REFRIGERANT LEAKS".

NOTE

1. An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, etc.
   Particularly for locations with weak reception, ensure there is a distance of at least 10 ft for indoor remote controllers, place power wiring and transmission wiring in conduits, and ground the conduits.

   (Refer to figure 3)
   1. Indoor unit
   2. Branch switch, ground leakage circuit breaker
   3. Remote controller
   4. COOL/HEAT selector
   5. Personal computer or radio
2. When installing in locations where there is heavy snowfall, implement the following snow measures.
   - Ensure the base is high enough that intakes are not clogged by snow.
   - Remove the rear intake grille to prevent snow from accumulating on the fins.

4. INSPECTING AND HANDLING THE UNIT

- At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.
- When handling the unit, take into account the following :

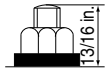
1. Fragile, handle the unit with care.
   Keep the unit upright in order to avoid compressor damage.
2. Decide on the transportation route.
3. If a forklift is to be used, pass the forklift arms through the large openings on the bottom of the unit. **(Refer to figure 4)**
4. If hanging the unit, use a cloth sling to prevent damaging the unit. Keeping the following points in mind, hang the unit following the procedure shown in figure 5.
   - Use a sling sufficiently strong to hold the mass of the unit.
   - Use 2 belts of at least 27 ft long.
   - Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
   - Hoist the unit making sure it is being lifted at its center of gravity.
5. After installation, remove the transportation brackets (yellow) attached to the large openings. **(Refer to figure 4)**

   (Refer to figure 4)
   1. Packaging material
   2. Forklift
   3. Removal of shipping brackets
   4. Shipping bracket (Remove the brackets by pushing the hook.)

   (Refer to figure 5)
   1. Belt sling
   2. Wear plate

5. PLACING THE UNIT

- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise. **(Refer to figure 6)**
- The base should support the unit with the extent larger than hatched area in figure 7.
  If protective rubber is to be attached, attach it to the whole face of the base.
- The height of the base should be at least 5-7/8 in. from the floor.
- Secure the unit to its base using foundation bolts. (Use four commercially available M12-type foundation bolts, nuts, and washers.)
- The foundation bolts should be inserted 13/16 in..

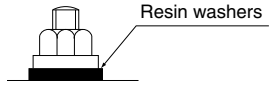


   (Refer to figure 6)
   1. Independent base (four corner type)
   2. Independent base (with center support type)
   3. Beam base (Horizontal)
   4. Beam base (Vertical)
   5. Center of the product

   (Refer to figure 7)
   1. Foundation bolt point (ϕ9/16 in. dia, : 4 positions)
   2. (Depth of product)
   3. (Inner dimension of the base)
   4. (Outer dimension of the base)

Model	A (in.)	B (in.)
72 · 96 · 120 PA type	48-13/16	43-3/8

- There are restrictions on the refrigerant pipe connecting order between outside unit in the case of the multi system.
  See "**2-1 Combination**" for detail.
- When installing on a roof, make sure the roof floor is strong enough and be sure to water-proof all work.
- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation.
  Drain water is sometimes discharged from the outside unit when it is running.
- For anti-corrosion type, use nuts with resin washers. If the paint on nut connections comes off, the anti-corrosion effect may decrease.



6. REFRIGERANT PIPING

- All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- After piping work is complete, do not under any circumstances open the shutoff valve until **"7. FIELD WIRING"** and **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are complete.
- Do not use flux when brazing the refrigerant piping. Use the phosphor copper brazing filler metal (B-Cu93P-710/795 : ISO 3677) which does not require flux.
  (Flux has extremely negative effect on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

6-1 Selection of piping material and Refrigerant branching kit

- Use only pipes which are clean inside and outside and which do not accumulate harmful sulfur, oxidants, dirt, cutting oils, moisture, or other contamination. (Foreign materials inside pipes including oils for fabrication must be 9 mg/10 ft or less.)
- Use the following items for the refrigerant piping.
  Material : Jointless phosphor-deoxidized copper pipe
  Size : See **"6-5 Example of connection"** to determine the correct size.
  Thickness : Select a thickness for the refrigerant piping which complies with national and local laws.
- For piping work, follow the maximum tolerated length, difference in height, and length after a branch indicated in the "**6-5 Example of connection**".
- Outside unit multi connection piping kit and refrigerant branching kit (sold separately) are needed for connection of piping between outside units (in case of multi system) and piping branches.
  Use only separately sold items selected specifically according to the outside unit multi connection piping kit, the refrigerant branching kit selection in the "**6-5 Example of connection**".

6-2 Protection against contamination when installing pipes

Protect the piping to prevent moisture, dirt, dust, etc. from entering the piping.

Place	Installation period	Protection method
Outdoor	More than a month	Pinch the pipe
	Less than a month	Pinch or tape the pipe
Indoor	Regardless of the period	

NOTE

Exercise special caution to prevent dirt or dust when passing piping through holes in walls and when passing pipe edges to the exterior.

6-3 Pipe connection

- Be sure to perform nitrogen permutation or nitrogen blow when brazing. **(Refer to figure 8)**
  Brazing without performing nitrogen permutation or nitrogen blow into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.

  (Refer to figure 8)
  1. Refrigerant pipe
  2. Location to be brazed
  3. Nitrogen
  4. Taping
  5. Handy valve
  6. Regulator
- The pressure regulator for the nitrogen released when doing the brazing should be set to about 2.9 psi (Enough to feel a slight breeze on your cheek).

NOTE

Do not use anti-oxidants when brazing the pipe joints.
Residue can clog pipes and break equipment.

6-4 Connecting the refrigerant piping

1. Direction to bring out the pipes
The local inter unit piping can be connected either forward or to the sides (taken out through the bottom) as shown in the figure 9. When passing out through the bottom, use the knock hole in the bottom frame.

(Refer to figure 9)
1. Left-side connection
2. Front connection
3. Right-side connection

Precautions when knocking out knock holes

- Open knock hole (large, small) in the base frame by drilling the 4 concave around it with a ϕ-1/4"-bit. **(Refer to figure 10)**

(Refer to figure 10)
1. Knock hole
   (large : for liquid pipe, suction gas pipe and HP/LP gas pipe)
2. Knock hole (small : for equalizer pipe)
3. Drill
4. Concave section (4 points)

- Be sure to avoid damaging the casing.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
- When passing electrical wiring through the knock holes, protect the wiring with a conduit or bushings, making sure not to damage the wiring.

2. Removing Pinch Piping
- When connecting refrigerant piping to an outside unit, remove the pinch piping using the procedure in the figure 11.
  (Refer to figure 11)
- About handling of shutoff valves, refer to [Shutoff valve operation procedure] in **"11-1 Before working"**.

CAUTION

After removing the gass, remove the pinch piping.
Any gas remaining inside may blow off the pinch piping when you dissolve the brazing, causing damage.

(Refer to figure 11)
1. Pich piping (4 pieces)
2. Do not remove the relay piping.
3. Pinch piping
4. Procedure 1 : Confirm the shutoff valve is closed.
5. Procedure 2 : Connect a charge hose to the service port of shutoff valve and remove the gas in the pinch piping.
6. Procedure 3 : After removing the gas in the pinch piping, dissolve the brazing using a burner and remove the pinch piping.

3. Connecting refrigerant piping to outside units
- Figure 12 shows the example of connecting refrigerant piping to outside units.
- The local inter unit piping next accesorry pipes are field supplyed.
- About the detail of connecting pipes between outside units on outside unit multi system, refer to the **"4. Precautions when connecting piping between outside units"** and the installation manual attached to the outside unit multi connection piping kit.

(Refer to figure 12)
1. When connected to the front
2. When connected at lateral side (bottom)
3. Remove the shutoff valve cover to connect.
4. Remove the knock hole on the bottom frame and route the piping under the bottom frame.
5. Liquid pipe shutoff valve
6. Suction gas pipe shutoff valve
7. HP/LP gas pipe shutoff valve
8. Equalizer pipe shutoff valve
9. Brazing
10. Liquid side accessory pipe (1)
11. Suction gas side accessory pipe (1)
12. HP/LP gas side accessory pipe (1)
13. Equalizer side accessory pipe (1)
14. L type accessory joint (1)
15. L type accessory joint (2)
16. Liquid side accessory pipe (2)
17. Suction gas side accessory pipe (2)
18. HP/LP gas side accessory pipe (1)
19. Equalizer side accessory pipe (2)

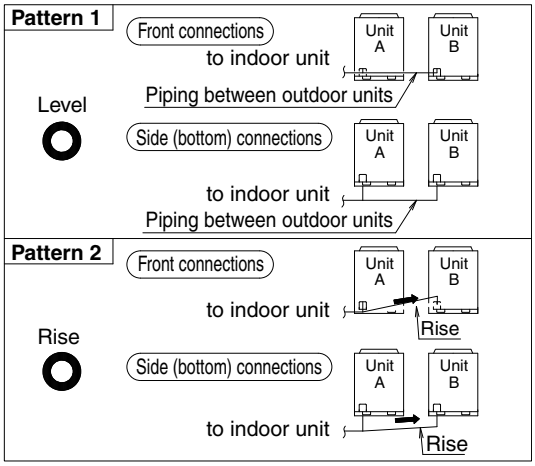
- Equalizer pipe is only for connection between outside units on multi outside unit system.
  That does not connect to indoor units.
- Make sure the onsite piping does not come into contact with other piping or the bottom frame or side panels of the unit.

4. Precautions when connecting piping between outside units
The Outside unit multi connection piping kit (sold separately) is needed to connect piping between outside units in multi system. Only proceed with piping work after considering the limitations on installation listed here and in **"5. Branching the refrigerant piping"**, always referring to the kit's installation manual.
(1) About outside unit multi connection piping kit
- Install the joint horizontally so that the attached warning label faces strait up, and the tilt is within ±15°. **(Refer to figure 13-1)**
  Do not install vertically. **(Refer to figure 13-2)**
- Maintain a straight portion of 19-5/8 in. or more until the split of the joint without wrapping any onsite piping around this area.
  Over 19-5/8 in. of straight area can be maintained by connecting at least 4-3/4 in. of onsite pipe (straight) to the joint. **(Refer to figure 13-3)**

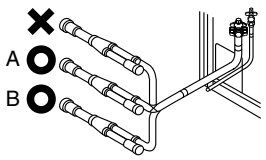
(Refer to figure 13)

1. Warning label
2. Horizontal surface
3. ±15° or less
4. Ground
5. Onsite pipe (4-3/4 in. length or more)
6. Straight part of 19-5/8 in. or more
7. C-arrow view
8. D-arrow view

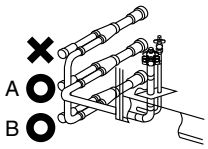
(2) The piping between outside units must be installed level (Pattern 1) or with a rise (Pattern 2). Otherwise oil may pool in the pipes.



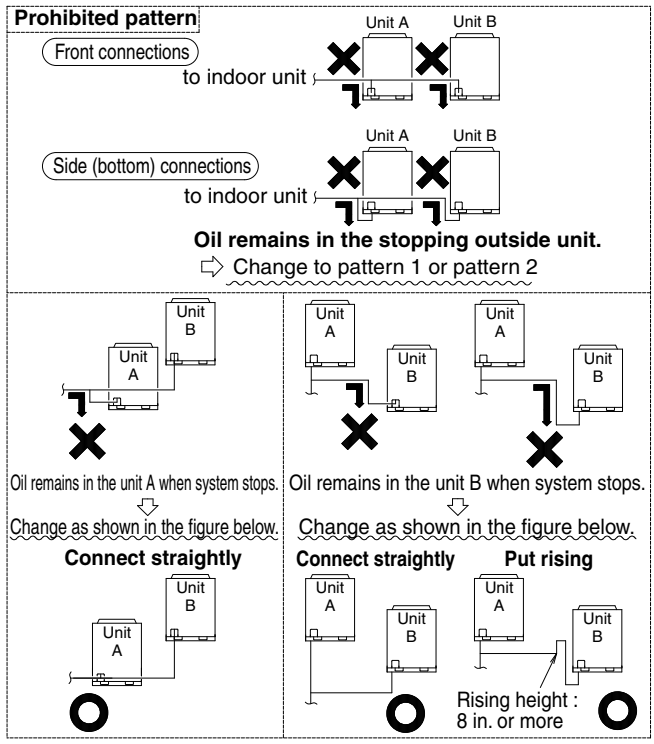
(3) To avoid the risk of oil detention in the stopping unit, always connect the shutoff valve and the piping between outside units as shown A or B in the figure below.



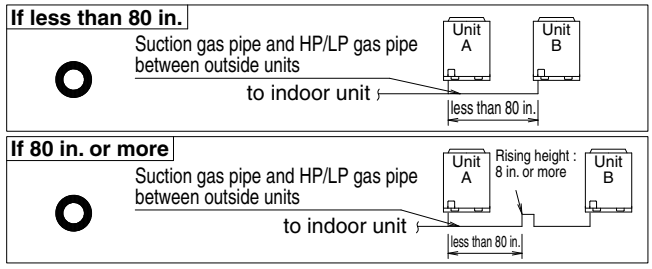
Front connections



Side (bottom) connections


Prohibited pattern
Front connections
to indoor unit
Unit A
Unit B
Side (bottom) connections
to indoor unit
Oil remains in the stopping outside unit.
Change to pattern 1 or pattern 2
Oil remains in the unit A when system stops.
Change as shown in the figure below.
Connect straightly
Oil remains in the unit B when system stops.
Change as shown in the figure below.
Connect straightly
Put rising
Rising height : 8 in. or more

(4) If the piping length between the outside units exceeds 80 in., create a rise of 8 in. or more in the suction gas and HP/LP gas piping under a length of 80 in. from the outside unit multi connection piping kit.


If less than 80 in.
Suction gas pipe and HP/LP gas pipe between outside units
to indoor unit
Unit A
Unit B
less than 80 in.
If 80 in. or more
Suction gas pipe and HP/LP gas pipe between outside units
to indoor unit
Rising height : 8 in. or more
less than 80 in.

5. Branching the refrigerant piping
Heed the restrictions below when installing the refrigerant branching kit and read the installation instruction manual with the kit. (Improper installation could lead to malfunctioning or breakdown of the outside unit.)

<REFNET joint>
Install the REFNET joint so it splits horizontally or vertically.

(Refer to figure 14)

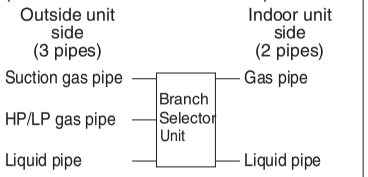
1. Horizontal
2. A-arrow view
3. Horizontal surface
4. ±30° or less
5. Vertical

<REFNET header>
Install the REFNET header so it splits horizontally.

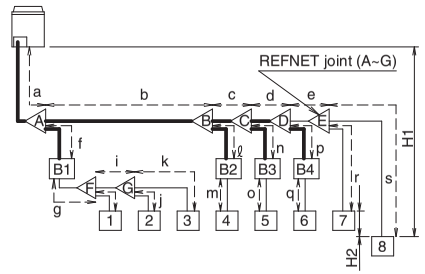
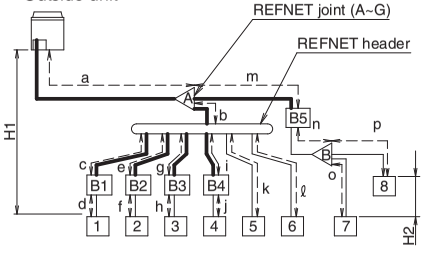
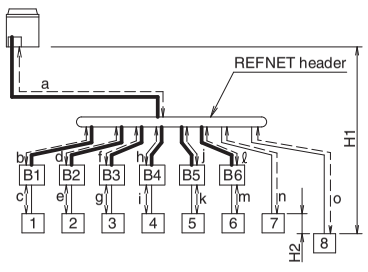
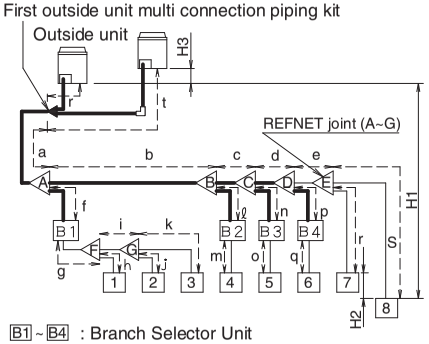
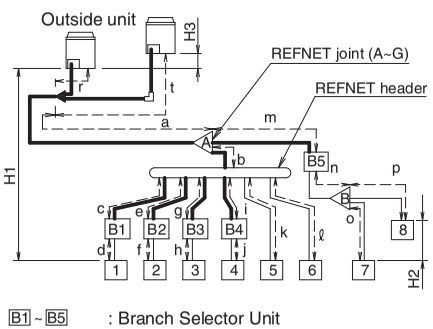
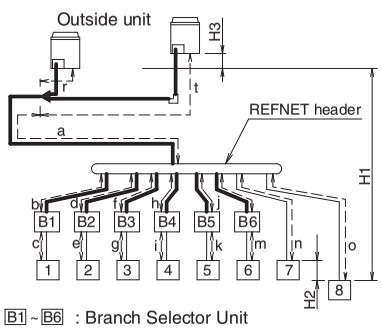
(Refer to figure 15)

1. Horizontal surface
2. B-arrow view

Example of connection
(Connection of 8 indoor units)

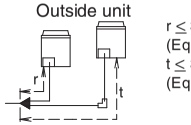


- Piping from outside unit to Branch Selector unit
  (Bold) : 3 pipes { Suction gas pipe / HP/LP gas pipe / Liquid pipe
- Piping from Branch Selector unit to indoor unit or Piping from Refrigerant branch kit to indoor unit used as cooling only
  (Thin) : 2 pipes { (Suction) gas pipe / Liquid pipe

	Branch with REFNET joint	Branch with REFNET joint and header	Branch with REFNET header
Single outside system REYQ72~120PAYD REYQ72~120PATJ	Outside unit  B1~B4 : Branch Selector Unit 1~6 : Indoor unit (Cool/Heat selection possible) 7, 8 : Indoor unit (Cooling only)	Outside unit  B1~B5 : Branch Selector Unit 1~4, 7, 8 : Indoor unit (Cool/Heat selection possible) 5, 6 : Indoor unit (Cooling only)	Outside unit  B1~B6 : Branch Selector Unit 1~6 : Indoor unit (Cool/Heat selection possible) 7, 8 : Indoor unit (Cooling only)
Multi outside system REYQ144~192PAYD REYQ216~240PYDNR REYQ144~192PATJ REYQ216~240PTJUR	First outside unit multi connection piping kit Outside unit  B1~B4 : Branch Selector Unit 1~6 : Indoor unit (Cool/Heat selection possible) 7, 8 : Indoor unit (Cooling only)	Outside unit  B1~B5 : Branch Selector Unit 1~4, 7, 8 : Indoor unit (Cool/Heat selection possible) 5, 6 : Indoor unit (Cooling only)	Outside unit  B1~B6 : Branch Selector Unit 1~6 : Indoor unit (Cool/Heat selection possible) 7, 8 : Indoor unit (Cooling only)

Maximum allowable length	Between outside unit (*2) and indoor unit	Actual pipe length	Pipe length between outside unit (*2) and indoor unit ≤ 540 ft		
			Example 8 : a + b + c + d + e ≤ 540 ft	Example 6 : a + b + ℓ 540 ft, 8 : a + m + n + p ≤ 540 ft	Example 8 : a + o ≤ 540 ft
		Equivalent length	Equivalent pipe length between outside unit (*2) and indoor unit ≤ 620 ft (Note 1) (Assume eqivalent pipe length of REFNET joint to be 1.6 ft, that of REFNET header to be 3.3 ft, that of BSVQ36 · 60 · 96 to be 13 ft, for calculation purposes)		
		Total extention length	Total piping length from outside unit (*2) to all indoor unit 3280 ft		
	Between first outside unit multi connection piping kit and outside unit (in case of multi system)	Actual and Equivalent pipe length	Actual pipe length from first outside unit multi connection piping kit to outside unit ≤ 33 ft Equivalent pipe length from first outside unit multi connection piping kit to outside unit ≤ 43 ft		
Allowable height difference	Between outside and indoor units	Difference in height	Difference in height between outside unit and indoor unit (H1) ≤ 164 ft (*3)(Max 295 ft if the outside unit is below (*4)		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) ≤ 49 ft		
	Between outside and outside units	Difference in height	Difference in height between adjacent outside units (H3) ≤ 16 ft		
Allowable length after the branch		Actual pipe length	Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 130 ft (*2)		
			Example 8 : b + c + d + e + s ≤130 ft	Example 6 : b + ℓ 130 ft, 8: m + n + p ≤ 130 ft	Example 8 : o 130 ft

Outside unit



r ≤ 33 ft
(Equivalent length ≤ 43 ft)
t ≤ 33 ft
(Equivalent length ≤ 43 ft)

(*1) ⟵ Indicates the Outside unit multi-connection piping kit.
(*2) In case of multi outdoor system, re-read "outside unit" to "the first Outside unit multi connection piping kit" as seen from the indoor unit.
(*3) This can be extended to 295 ft with a replacement outdoor unit PCB.
(*4) If the difference between the outdoor unit and indoor unit is greater than 164 ft, the liquid line must be increased by one size.

Outside unit multi connection piping kit and Refrigerant branch kit selection

- Refrigerant branch kits can only be used with R410A.
- When multi outdoor system are installed, be sure to use the special separately sold Outside unit multi connection piping kit. (BHFP26P90U).
  (For how to select the proper kit, follow the table at right.)
- Never use BHFP26M90U, BHFP22M90U for M type of this series or T joint (field supplyed).

How to select the REFNET joint

When using REFNET joint at the first branch counted from the outside unit side, choose from the following table in accordance with the outside unit capacity type.
(Example : REFNET joint A)

Outside unit capacity type	Refrigerant branch kit name
REYQ72 · 96PA type	KHRP25A33T
REYQ120~168PA type	KHRP25M72TU
REYQ192~240PA type	KHRP25M73TU

- Choose the REFNET joints other than the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
X < 72	KHRP25A22T	KHRP26A22T
72 ≤ X < 111	KHRP25A33T	KHRP26A33T
111 ≤ X	KHRP25M72TU	KHRP26M72TU
162 ≤ X	KHRP25M73TU	KHRP26M73TU

How to select the REFNET header

- Choose from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name	
	3 pipes	2 pipes
X < 72	KHRP25M33H	KHRP26M22H or KHRP26M33H
72 ≤ X < 111		KHRP26M33H
111 ≤	KHRP25M72H	KHRP26M72H
162 ≤ X	KHRP25M73H	KHRP26M73H

How to select the outside unit multi connection piping kit
(This is required when the system is multi outside unit system.)

- Choose from the following table in accordance with the number of outside units.

Number of outside unit	Connecting piping kit name
2 units	BHFP26P90U

Example for indoor units connected downstream

Example REFNET joint C : Indoor units 5 + 6 + 7 + 8

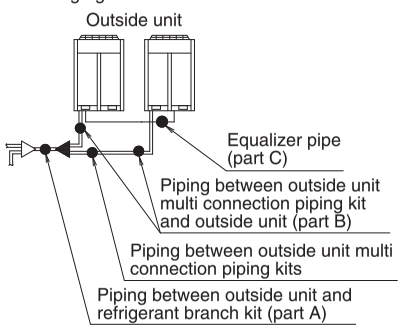
Example REFNET joint B : Indoor units 7 + 8
Example REFNET header : Indoor units 1 + 2 + 3 + 4 + 5 + 6

Example REFNET header :
Indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

⚠ The thickness and material shall be selected in accordance with local code.

For an outside unit installation, make the settings in accordance with the following figure.


Outside unit
Equalizer pipe (part C)
Piping between outside unit multi connection piping kit and outside unit (part B)
Piping between outside unit multi connection piping kits
Piping between outside unit and refrigerant branch kit (part A)

Piping between outside unit(*2 and refrigerant branch kit (partA)

- Choose from the following table in accordance with the outdoor units system capacity type.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REYQ72PA	ϕ3/4	ϕ5/8	ϕ3/8
REYQ96PA	ϕ7/8	ϕ3/4	
REYQ120PA	ϕ1-1/8		ϕ1/2
REYQ144PA		ϕ7/8	
REYQ168PA			ϕ5/8
REYQ192PA~216PR			
REYQ240PR	ϕ1-3/8	ϕ1-1/8	

Piping between outside unit multi connection piping kit and outside unit (part B)

- Choose from the following table in accordance with the capacity type of the outside unit connected.

(unit : in.)

Outside unit capacity type	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
REMQ72 · 96PA type	ϕ7/8	ϕ3/4	ϕ3/8
REMQ120PR type	ϕ1-1/8		ϕ 1/2

Piping between refrigerant branch kits
Piping between refrigerant branch kit and Branch Selector unit
Piping between Branch Selector unit and refrigerant branch kit

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

*1 Connection piping must not exceed the refrigerant Piping size between outside unit and refrigerant branch kit (part A)
*2 When selecting 2 pipes line(gas pipe and liquid pipe), use Suction gas pipe column for gas pipe and Liquid pipe column for liquid pipe.

(unit : in.)

Indoor capacity index	Piping size (O. D.)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
X < 54	ϕ5/8	ϕ1/2	ϕ3/8
54 ≤ X < 72	ϕ3/4	ϕ5/8	
72 ≤ X < 111	ϕ7/8	ϕ3/4	
111 ≤ X < 162	ϕ1-1/8		ϕ1/2
162 ≤ X		ϕ1-1/8	ϕ5/8

Piping between refrigerant branch kit, Branch Selector unit and indoor unit.

- Match to the size of the connection pipng on the indoor unit.

(unit : in.)

Indoor unit capacity type	Piping size (O. D.)	
	gas pipe	Liquid pipe
07 · 09 · 12 · 18	ϕ1/2	ϕ1/4
24 · 30 · 36 · 48	ϕ5/8	ϕ3/8

Equalizer pipe (part C) (outside multi system only)

(unit : in.)

Piping size (O. D.)	ϕ3/4

How to calculate the additional refrigerant to be charged

[HEAT RECOVER SYSTEM]
Additional refrigerant to be charged : R(lb)
(R should be rounded off in units of 0.1 lb.)

$$R = \left(\begin{array}{l} (\text{Total length (ft) of liquid piping size at } \phi 7/8) \times 0.249 + (\text{Total length (ft) of liquid piping size at } \phi 3/4) \times 0.175 \\ + (\text{Total length (ft) of liquid piping size at } \phi 5/8) \times 0.121 + (\text{Total length (ft) of liquid piping size at } \phi 1/2) \times 0.081 \\ + (\text{Total length (ft) of liquid piping size at } \phi 3/8) \times 0.040 + (\text{Total length (ft) of liquid piping size at } \phi 1/4) \times 0.015 \end{array} \right) \times 1.02 +$$

HEAT RECOVER SYSTEM	
MODEL NAME	THE AMOUNT OF REFRIGERANT
REYQ72 ~ 120PAYD	7.9 lb
REYQ72 ~ 120PATJ	
REYQ144 ~ 192PAYD	2.2 lb
REYQ144 ~ 192PATJ	
REYQ216~ 240PYDNR	3.3 lb
REYQ216~ 240PTJUR	

+

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
INDOOR CONNECTION CAPACITY	MODEL NAME REYQ72 ~ 192PAYD REYQ72 ~ 192PATJ
MORE THAN 100% 120% OR LESS	1.1 lb
MORE THAN 120% 130% OR LESS	1.1 lb

Example for refrigerant branch using REFNET joint and REFNET heder for systems and each pipe length as shown below.

Outside system : REYQ192PAYD
Total capacity of indoor unit : 116%

a : ϕ3/4 × 15ft.	e : ϕ3/8 × 5ft.	i : ϕ3/8 × 5ft.	m : ϕ3/8 × 10ft.	r : ϕ1/2 × 1ft.
b : ϕ3/4 × 10ft.	f : ϕ3/8 × 5ft.	j : ϕ3/8 × 5ft.	n : ϕ3/8 × 5ft.	s : ϕ3/8 × 1ft.
c : ϕ3/8 × 5ft.	g : ϕ3/8 × 5ft.	k : ϕ3/8 × 10ft.	o : ϕ1/4 × 5ft.	t : ϕ3/8 × 1ft.

$$R = (\boxed{25 \times 0.175} + \boxed{1 \times 0.121} + \boxed{1 \times 0.081} + \boxed{75 \times 0.040} + \boxed{10 \times 0.015}) \times 1.02 + \boxed{2.2} + \boxed{1.1}$$

a, b — u — r — c~n, s, t — o, p — REYQ192PAYD — 116%

$$= 11.182 \Longrightarrow \boxed{11.1\text{lb}}$$

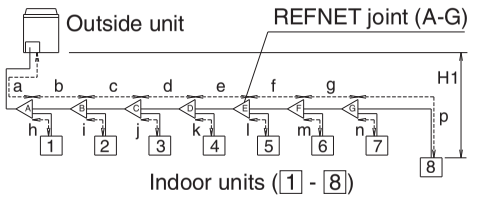
Round off in units of 0.1 lb.

Note 1.
When the equivalent pipe length between outside and indoor units is 295 ft or more, the size of main pipes on the liquid side (refer to figure 16) must be increased according to the right table.
(Never inxrease suction gas pipe and HP/LP gas pipe.)

System	Liquid pipe
REYQ72PA type	ϕ3/8 > ϕ1/2
REYQ96PA type	ϕ1/2 > ϕ5/8
REYQ120 ~ 192PA type	ϕ5/8 > ϕ3/4
REYQ216 ~ 240PR type	

(Refer to figure 16)
1.Outdoor unit
2.Main pipes
3.Increase only liquid pipe size
4.First refrigerant branch kit
5.Branch Selector unit
6.Indoor unit

Note 2.
Allowable length after the first refrigerant branch kit to indoor units is 130 ft or less, however it can be extended up to 295 ft if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings	
1. It is necessay to increase the pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) If the increased pipe size is larger than the main pipe size, increase the main pipe size to the same as the increased size.	8 b+c+d+e+f+g+p≤ 295 ft. increase the pipe size of b, c, d, e, f, g	Increase the pipe size as follows ϕ3/8 > ϕ1/2 ϕ5/8 > ϕ3/4 ϕ7/8 > ϕ1* ϕ1-3/8 > ϕ1-1/2* ϕ1/2 > ϕ5/8 ϕ3/4 > ϕ7/8 ϕ1-1/8 > ϕ1-1/4*
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	a+b×2+c×2+d×2+e×2+f×2+g×2 +h+i+j+k+l+m+n+p≤ 3280 ft.	
3. Indoor unit to the nearest branch kit ≤ 130 ft.	h, i, j..... p ≤ 130 ft.	
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤130 ft.	The farthest indoor unit 8 The nearest indoor unit 1 (a+b+c+d+e+f+g+p)-(a+h)≤ 130 ft.	

*If the specified pipe diameter is not available on site, do NOT substitute with a pipe of greater diameter.

7. FIELD WIRING

- All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Never install a phase advancing capacitor. As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves.
- Only proceed with wiring work after switching off all power.
- Always ground wires in accordance with relevant local and national regulations.
- This machine includes an inverter device. Connect ground and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.
  Gas pipes : can explode or catch fire if there is a gas leak.
  Sewage pipes : no grounding effect is possible if hard plastic piping is used.
  Telephone ground wires and lightning rods : dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.
- Be sure to install an ground leakage circuit breaker.
  This unit uses an inverter, so install the ground leakage circuit breaker that be capable of handling high harmonics in order to prevent malfunctioning of the ground leakage circuit breaker itself.
- Ground leakage circuit breaker which are especially for protecting ground-faults should be used in conjunction with main switch or fuse for use with wiring.
- Electrical wiring must be done in accordance with the wiring diagrams and the description herein.
- Do not operate until refrigerant piping work is completed.
  (If operated before complete the piping work, the compressor may be broken down.)
- Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring.
  (If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)
- This product have reversed phase protection detector that only works when the power is turned on. If there exists blackout or the power goes on and off when the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.
- Attach the power wire securely.
- Never connect the power supply in reversed phase.
  The unit can not operate normally in reversed phase.
  If you connect in reversed phase, replace two of the three phases.
- Make sure the electrical unbalance ratio is no greater than 2%. If it is larger than this, the unit's lifespan will be reduced.
  If the ratio exceeds 4%, the unit will shut down and an malfunction code will be displayed on the indoor remote controller.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and ground terminal).
- If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
  Running the product in reversed phase may break the compressor and other parts.

7-1 Power circuit, safety device and cable requirements

- A power circuit (see the following table) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and a ground leakage circuit breaker.
- When using residual current operated circuit breakers, be sure to use a high-speed type (0.1 second or less) 200mA rated residual operating current.
- Use copper conductors only.
- Use insulated wire for the power cord.
- Select the power supply cable type and size in accordance with relevant local and national regulations.
- Specifications for local wiring power cord and branch wiring are in compliance with local cord.

	Phase and frequency	Voltage	Minimum circuit amp.	Recommended Max Overcurrent Protection	Transmission line selection
REYQ72PAYD	ϕ 3, 60Hz	460V	16.0A	20A	AWG18-16
REYQ96PAYD	ϕ 3, 60Hz	460V	20.4A	25A	AWG18-16
REYQ120PAYD	ϕ 3, 60Hz	460V	20.5A	25A	AWG18-16
REYQ144PAYD	ϕ 3, 60Hz	460V	16.7+16.7A	25A+25A	AWG18-16
REYQ168PAYD	ϕ 3, 60Hz	460V	16.7+20.3A	25A+25A	AWG18-16
REYQ192PAYD	ϕ 3, 60Hz	460V	20.3+20.3A	25A+25A	AWG18-16
REYQ216PYDNR	ϕ 3, 60Hz	460V	20.5+20.3	25A+30A	AWG18-16
REYQ240PYDNR	ϕ 3, 60Hz	460V	20.5+20.5	30A+30A	AWG18-16
REYQ72PATJ	ϕ 3, 60Hz	208-230V	36.1A	40A	AWG18-16
REYQ96PATJ	ϕ 3, 60Hz	208-230V	43.8A	45A	AWG18-16
REYQ120PATJ	ϕ 3, 60Hz	208-230V	44.2A	50A	AWG18-16
REYQ144PATJ	ϕ 3, 60Hz	208-230V	28.8+28.8A	40A+40A	AWG18-16
REYQ168PATJ	ϕ 3, 60Hz	208-230V	28.8+36.1A	40A+50A	AWG18-16
REYQ192PATJ	ϕ 3, 60Hz	208-230V	36.1+36.1A	50A+50A	AWG18-16
REYQ216PTJUR	ϕ 3, 60Hz	208-230V	36.1+41.3	50A+60A	AWG18-16
REYQ240PTJUR	ϕ 3, 60Hz	208-230V	41.3+41.3	60A+60A	AWG18-16

7-2 Wiring Connection Example for Whole System

(Refer to figure 17)

1. Power supply
2. Main switch
3. Ground leakage circuit breaker
4. Fuse
5. Outside unit
6. COOL/HEAT selector
7. Remote controller
8. Indoor unit
9. Branch Selector unit

NOTE

- Make sure the communication/control wiring (i.e. for the remote controller, between units, etc.) and the power wiring do not pass near each other, keeping them at least 2 in. apart.
  Proximity may cause electrical interference, malfunctions, and breakage.
- Be sure to connect the power wiring to the power wiring terminal block and secure it as described in "**7-5 Power Wiring Connection Procedure**".
- Transmission wiring should be secured as described in "**7-4 Transmission Wiring Connection Procedure**".
- Secure wiring with clamp such as insulation lock ties to avoid contact with piping.
- Shape the wires to prevent the structure such as the electrical components box lid deforming. And close the cover firmly.
- All field wiring is to be procured on site.

7-3 Leading wire Procedure

- The power wiring and ground wiring are passed out from the power wiring hole on the sides, the front (knock hole) or the bottom frame (knock hole) .
- The transmission wiring is passed out from the wiring hole (knock hole) on the front of the unit or from a piping hole.

(Refer to figure 18-1)

1. Electric wiring diagram
   Printed on the back of the electrical components box lid.
2. Knockout hole
3. Power line
4. Transmission line

(Refer to figure 18-2)

1. electrical components box lid
2. Service lid
3. [Service precautions] Label location

NOTE

- Open the knock holes with a hammer or the like.
- After knocking out the holes, we recommend you remove any burrs and paint them using the repair paint to prevent rusting.
  (Refer to figure 18-1, 2)
- When passing wiring through the knock holes, remove burrs around the knock holes and protect the wiring with protective tape.
  (Refer to figure 18-1, 2)
- If small animals might enter the unit, block off any gaps (hatching parts in figure 18-1, 2) with material (field supply).

7-4 Transmission Wiring Connection Procedure

- Referring to figure 19 connect the transmission wiring between outside unit and indoor unit, outside unit and outside unit of other system, outside unit and outside unit of same system.

(Refer to figure 19)

1. Master unit (*)
2. Sub unit (*)
3. Outside unit A
4. Outside unit B
5. electrical components box (1)
6. (Only REYQ~PAYD)
   electrical components box (2)
7. (Only REYQ~PAYD)
   Do not open the electrical components box (2) lid.
   (There are no work when installation)
8. Never connect the power wire.
9. To outside unit of other system
10. Use 2-conductor, stranded non-shield copper cable/PVC or vinyl jacket AWG-2 wiring,
11. Branch Selector unit
12. Indoor unit
13. Indoor unit (Cooling only)

(*) : The Outside unit that connect the transmission wiring to Branch Selector unit is Master unit of the multi system. And the other units are Sub unit. (In this figure, Outside unit A is the Master unit.)
Check operation in installation work, Onsite settings and so on are done by operating the PC-board (A1P) of Master unit.

- Do not connect the power wiring to terminals for the transmission wiring. Doing so would destroy the entire system.
- When connecting wires to the terminal block on the PC-board, too much heat or tightening could damage the PC-board. Attach with care.
  See the table below for the tightening torque of the transmission wiring terminals.

Screw size	Tightening torque (ft · lbf)
M3.5 (A1P)	0.59 ~ 0.71

- Transmission wiring (About the symbol [1] ~ [2], **see figure 19**) should be done within the following limitations.
  If they are exceeded, transmission problems may occur.

[1] Between outside unit and Branch Selector (or indoor) unit
Between Branch Selector unit and indoor unit
Between outside unit and outside unit of other systems
Max. wiring length : 3280 ft
Max. total wiring length : 6560 ft
Max. no. of branches : 16
[Note]
No branch is allowed after branch (**See figure 20**)
Max. no. of outside units of other system that can be connected : 10

(Refer to figure 20)

1. Branch
2. Branch after branch

[2] Between outside unit and outside unit of same system
Max. wiring length : 100 ft

- The transmission wiring inside the electrical components box should be secured using the clamp (1) as shown in figure 21.

(Refer to figure 21)

1. In the electrical components box
2. Retain to the electrical components box with the accessory clamp (1).
3. Vinyl tube (accessory)

- Outside the units, the transmission wiring must be finished simultaneously with the local refrigerant piping, and wound with tape (field supply) as shown in figure 22.

(Refer to figure 22)

1. Suction gas pipe
2. HP/LP gas pipe
3. Liquid pipe
4. Insulation material
5. Finishing tape
6. Transmission wiring

- Transmission wiring between outside units in the outside multi system must be connected to terminals Q1 and Q2 (TO MULTI UNIT).
  Connecting the wires to the F1, F2 (TO OUT/D UNIT) terminals results in system malfunction.
- Wiring to other systems should be connected to terminals F1 and F2 (TO OUT/D UNIT) on the PC-board of the master unit. The outside unit that connected transmission wiring to Branch Selector (or indoor) unit is the master unit. The others are sub unit.

7-5 Power Wiring Connection Procedure

- Be sure to connect the power supply wiring to the power supply terminal block and hold it in place using the included clamp as shown in the figure 23.
- The L1, L2, L3 and N phases of the power wiring should be secured separately to the hook using the included clamp (1).
- The ground wiring should be bound to the power wiring using the included clamp (1) to prevent outside force from being applied to the terminal area.

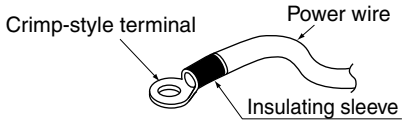
(Refer to figure 23)

1. Power supply
   (MODEL PAYD: 3 ~ 460V 60Hz)
   (MODEL PATJ: 3 ~ 208-230V 60Hz)
2. Ground leakage circuit breaker
3. Branch switch, ground leakage circuit breaker
4. Ground wire
5. Electrical components box (1)
6. (Only REYQ~PAYD)
   Electrical components box(2)
7. (Only REYQ~PAYD)
   Do not open the Electrical components box (2) lid.
   (There are no work when installation)

8. Attach insulation sleeves
9. Power supply terminal block
10. Ground terminal
11. Clamp (1) (accessory)
12. Vinyl tube (accessory)

⚠ CAUTION

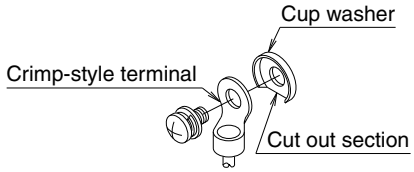
- Be sure to use crimp-style terminal with insulating sleeves for connections. (See the figure below.)



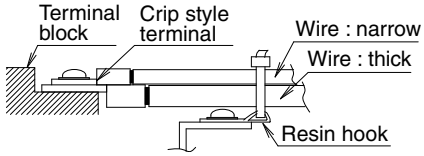
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them. See the following table for the tightening torque of the terminal screws.

Screw size	Tightening torque (ft · lbf)
M8 Power terminal, ground terminal	4.06 ~ 5.38

- When pulling the ground wire out, wire it so that it comes through the cut out section of the cup washer. (See the figure below.) An improper ground connection may prevent a good ground from being achieved.



- When two wires are connected to a single terminal, connect them so that the rear sides of the crimp contacts face each other. Also, make sure the thinner wire is on top, securing the two wires simultaneously to the resin hook using the included clamp (1).



7-6 Procedure for Wiring Inside Units

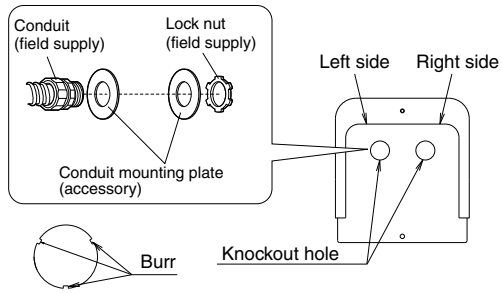
- Referring to figure 24, secure and wire the power and transmission wiring using the included clamp (1), (2), and (3).
- Wire so that the ground wiring does not come into contact with the compressor lead wiring.
  If they touch, this may have an adverse effect on other devices.
- The transmission wiring must be at least 2 in. away from the power wiring.
- Make sure all wiring does not make contact with the pipes (hatching parts in the figure 24).

(Refer to figure 24)

1. Retain with accessory clamp (3).
2. Electric conduit
3. When routing out the power/ground wires from the left side.
4. When routing out the transmission wiring from the opening for piping.
5. When routing out the power/ground wires from the front.
6. Clear over 2 in..
7. When routing out the transmission wiring from the knockout hole.
8. Retain to the back of the column support with the accessory clamp (2).
9. When routing out the power/ground wires from the right side.
10. Power wiring
11. Transmission wiring
12. Ground wire

Precautions when knocking out knockout holes

- To punch out a knockout hole, hit it with a hammer.
- Open an appropriate hole as needed.
- After knocking out the holes, trim off the burr, then we recommend you to paint the edges and areas around the edges using the repair paint to prevent rusting.
- Power line : Open a knockout hole as shown at left and connect it using a conduit.
- Transmission line : Connect it using a conduit in the knockout hole on the right.



- After wiring work is completed, check to make sure there are no loose connections among the electrical parts in the electrical components box.

8. AIR TIGHT TEST AND VACUUM DRYING

- After finishing piping work, carry out airtight test and vacuum drying.

⚠ NOTE

- Always use dry nitrogen gas for the airtightness test.
- Absolutely do not open the shutoff valve until the main power ciruit insulation measurement has been completed. (measuring after the shutoff valve is opened will cause the insulation value to drop.)

<Needed tools>

Gauge manifold Charge hose valve	• To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A. • Use charge hose that have pushing stick for connecting to service port of shutoff valves or refrigerant charge port.
Vacuum pump	• The vacuum pump for vacuum drying should be able to lower the pressure to below 500 microns. • Take care the pump oil never flows backward into the refrigerant pipe during the pump stops.

<The system for air tight test and vacuum drying>

Referring to figure 25, connect a dry nitrogen tank, refrigerant tank, and a vacuum pump to the outside unit.

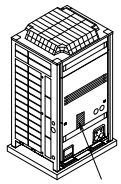
The refrigerant tank and the charge hose connection to refrigerant charge port or the valve A in figure 25 are needed in **"11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION"**.

(Refer to figure 25)

1. Gauge manifold
2. Nitrogen
3. Measuring device
4. R410A tank (with siphon)
5. Vacuum pump
6. Charge hose
7. Equalizer pipe shutoff valve
8. HP/LP gas pipe shutoff valve
9. Suction gas pipe shutoff valve
10. Liquid pipe shutoff valve
11. Refrigerant charge port
12. Valve A
13. Valve B
14. Valve C
15. Outside unit
16. To Branch Selector (or indoor) unit
17. Shutoff valve
18. Service port
19. Field piping
20. Gas flow

NOTE

- The air-tightness test and vacuum drying should be done using the service ports of equalizer pipe, HP/LP gas pipe, suction gas pipe and liquid pipe shutoff valve.
  See the [R410A] Label attached to the front plate of the outside unit for details on the location of the service port (see figure at right)



[R410A] Label

- See **[Shutoff valve operation procedure]** in **"11-1 Before working"** for details on handling the shutoff valve.
- The refrigerant charge port is connected to unit pipe.
  When shipped, the unit contains the refrigerant, so use caution when attaching the charge hose.

<Air tight test>

Pressurize the liquid pipe, suction gas pipe, HP/LP gas pipe and equalizer pipe from the service ports of each shutoff valve to 550 psi (do not pressurize more than 550 psi). If the pressure does not drop within 24 hours, the system passes the test.
If there is a pressure drop, check for leaks, make repairs and perform the airtight test again.

NOTE

<Vacuum drying> Do not energize the indoor unit before performing the vacuum drying.

A triple evacuation is recommended; note that this is basic refrigeration best practice and not specific to Daikin. The refrigerant gauges should be connected to the liquid, HP/LP and suction gas pipes* and a triple evacuation performed. Break the first and second vacuum with dry nitrogen. The final evacuation should be to below 500 microns and a rise test conducted; the system should hold below 500 microns for at least one hour.

***On manifold systems, the equalizer lines must be evacuated separately.**

9. PIPE INSULATION

- Insulation of pipes should be done after performing "**8. AIR TIGHT TEST AND VACUUM DRYING**".
- Always insulate the liquid piping, the HP/LP gas piping, the gas piping, the equalizer pipe (between the outside units for the outdoor multi system) and these pipe connections.
  Failing to insulate the pipes may cause leaking or burns.
  Especially, be sure to insulate the HP/LP gas piping as withstanding as the suction pipe because the suction gas follows in the HP/LP gas piping when the system is whole cooling mode.
  Be sure to use insulation that is designed for use with HVAC systems.
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation. Refer to the below.
  - Ambient temperature : 86°F, humidity : 75% to 80% RH : min. thickness : 9/16 in..
  - If the ambient temperature exceeds 86°F and the humidity 80% RH, then the min. thickness is 3/4 in..
    See the Engineering data book for detail.
- If there is a possibility that condensation on the shutoff valve might drip down into the indoor unit through gaps in the insulation and piping because the outside unit is located higher than the indoor unit, etc., this must be prevented by caulking the connections, etc. **(Refer to figure 26)**
- The piping lead-out hole lid should be attached after opening a knock hole. **(Refer to figure 27)**
- If small animals and the like might enter the unit through the piping lead-out hole, close the hole with blocking material (procured on site) after completion of "**11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION**". **(Refer to figure 30)**

(Refer to figure 26)

1. Insulation material
2. Caulking, etc.

(Refer to figure 27)

1. Piping lead-out hole lid
2. Open a knock hole at "▨".
3. Block "▨".

NOTE

- After knocking out the holes, we recommend you remove burrs in the knock holes (**See figure 27**) and paint the edges and areas around the edges using the repair paint.

10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS

Be sure to check the followings.

For those doing electrical work

1. Make sure there is no faulty transmission wiring or loosing of a nut.
   See "**7-4 Transmission Wiring Connection Procedure**".
2. Make sure there is no faulty power wiring or loosing of a nut.
   See "**7-5 Power Wiring Connection Procedure**".
3. Has the insulation of the main power circuit deteriorated?
   Measure the insulation and check the insulation is above regular value in accordance with relevant local and national regulations.

For those doing pipe work

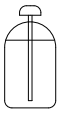
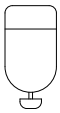
1. Make sure piping size is correct.
   See "**6-1 Selection of piping material and Refrigerant branching kit**".
2. Make sure insulation work is done.
   See "**9. PIPE INSULATION"**.
3. Make sure there is no faulty refrigerant piping.
   See "**6. REFRIGERANT PIPING**".

11. ADDITIONAL REFRIGERANT CHARGE AND CHECK OPERATION

The outside unit is charged with refrigerant when shipped from the factory, but depending on the size and length of the piping when installed, it may require additional charging.
For charging the additional refrigerant, follow the procedure in this chapter.
And then carry out the check operation.

11-1 Before working

[About the refrigerant tank]
Check whether the tank has a siphon pipe before charging and place the tank so that the refrigerant is charged in liquid form.
(See the figure below.)

With siphon pipe	
	Stand the tank upright and charge. (The siphon pipe goes all the way inside, so the tank does not need be put upside-down charge in liquid form.)
Other tanks	
	Stand the tank upside-down and charge.

- Always use the proper refrigerant (R410A). If charged with the refrigerant containing an improper material, it may cause an explosion or accident.
- R410A is a mixed refrigerant, so charging it as a gas will cause the refrigerant composition to change, which may prevent normal operation.

[Shutoff valve operation procedure]
When operating the shutoff valve, follow the procedure instructed below.

- Do not open the shutoff valve until **"10. CHECKING OF DEVICE AND INSTALLATION CONDITIONS"** are completed. If the shutoff valve is left open without turning on the power, it may cause refrigerant to buildup in the compressor, leading insulation degradation.
- Be sure to use the correct tools.
  The shutoff valve is not a back-seat type. If forced it to open, it might break the valve body.
- When using a service port, use the charge hose.
- After tightening the cap, make sure no refrigerant gas is leaking.

Tightening torque
The sizes of the shutoff valves on each model and the tightening torque for each size are listed in the table below.

<Size of Shutoff Valve>

	72P type	96P type	120P type
(1) Liquid pipe shutoff valve	ϕ3/8 The 120P type corresponds to the ϕ1/2 - diameter onsite piping using the accessory pipe.		
(2) Suction gas shutoff valve	ϕ1 The 72 · 96P type corresponds to the ϕ7/8 - diameter onsite piping using the accessory pipe. The 120P type corresponds to the ϕ1-1/8 - diameter onsite piping using the accessory pipe.		
(3) HP/LP gas shutoff valve	ϕ3/4		

(Refer to figure 28)

1. Service port
2. Cap
3. Hex holes
4. Shaft (valve body)
5. Seal section

To open

1. Remove the cap and turn the shaft counterclockwise with the hexagon wrench.
2. Turn it until the shaft stops.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

To close

1. Remove the cap and turn the shaft clockwise with the hexagon wrench.
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.
   (For the tightening torque, refer to the item <Tightening Torque>.)

<Tightening torque>

Shutoff valve size	Tightening torque ft · lbf (Turn clockwise to close)			
	Shaft (valve body)		Cap (valve lid)	Service port
ϕ 3/8	3.98 - 4.87	Hexagonal wrench 4mm	9.95 - 12.17	8.48 - 10.3
ϕ 1/2	5.97 - 7.30		13.3 - 16.2	
ϕ 3/4	19.9 - 24.3	Hexagonal wrench 8mm	16.6 - 20.3	
ϕ 1				

[How to Check How Many Units are Connected]
It is possible to find out how many indoor or outside unit in the system are turned on by operating the push button on the PC-board (A1P) of outside unit (In case of multi system master unit).
Follow the procedure below to check how many indoor or outside units are turned on.

(LED display: ● ...OFF ☼ ...ON ◑ ...Blinking ＊ ...Uncertain)		LED display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
(1) Press the MODE button (BS1) once at **Setting Mode 1** (H1P : off), and set the MONITOR MODE (H1P : Blinking).		◑	●	●	●	●	●	●
(2) Press the SET button (BS2) the number of times until the LED display matches that at right.	For checking the number of outside units : eight times	◑	●	●	☼	●	●	●
	For checking the number of indoor units : five times	◑	●	●	●	☼	●	☼
(3) Press the RETURN button (BS3) and read the number of units from the display of H2P through H7P. [Reading Method] The display of H2P through H7P should be read as a binary number, with ◑ standing for "1" and ● standing for "0".		◑	＊	＊	＊	＊	＊	＊
Ex: For the LED display at right, this would be "0 1 0 1 1 0 ", which would mean 22 units are connected. 32 × **0** + 16 × **1** + 8 × **0** + 4 × **1** + 2 × **1** + 1 × **0** = 22 units Note: "000000" indicates 64 units.		◑	●	◑	●	◑	◑	●
(4) Press the MODE button (BS1) once. This returns to **Setting Mode 1** (H1P : OFF, default).		●	●	☼	●	●	●	●

NOTE

- Press the "MODE button" (BS1) if you get confused while operating.
  This returns to **Setting Mode 1** (H1P : OFF, default).

11-2 Procedure of Adding Refrigerant charging and check operation

WARNING **Electric Shock Warning**

- Make sure to close the electrical components box lid before turning on the power.
- Perform the setting on the PC-board (A1P) of the outside unit and check the LED display after the power is on via the inspection door which is in the electrical components box lid.

  (Refer to figure 29)
  1. electrical components box (1)
  2. Inspection door
  3. electrical components box (1) lid
  4. LED (H1~8P)
  5. Push button(BS1~5)
  6. Lift the protruding part to open the inspection door.
- Use an insulated rod to operate the push buttons via the electrical components box's inspection door.
  There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.
- Make sure to use the protect tool (protective groves and goggles) when charging the refrigerant.
- Due to a danger of liquid hammer, the refrigerant must not be charged over the allowable maximum amount when charging the refrigerant.
- Do not perform the refrigerant charging operation under working for the Branch Selector and indoor unit.
- When opening the front panel, make sure to take caution to the fan rotation during the working.
  After the outside unit stops operating, the fan may keep rotation for a while.

NOTE

- If operation is performed within 12 minutes after the Branch Selector, indoor and outside units are turned on, H2P will be lit on and the compressor will not operate.
  Check the LED display indicate as shown below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

- In order to ensure uniform refrigerant distribution, it may take up to around 10 minutes for the compressor to start up after the unit starting operating. This is not a malfunction.
- The refrigerant charge port is connected to the piping inside the unit.
  When the unit is shipped from the factory, the unit's internal piping is already charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, make sure to close the lid of the refrigerant charging port.
  The tightening torque for the lid is 8.48 to 10.3 ft · lbf.
- See [Shutoff valve operation procedure] in chapter 11-1 for details on how to handle shutoff valves.
- When done or when pausing the refrigerant charging operation, close the valve of the refrigerant tank immediately.
  The refrigerant charge port of this product have electric expansion valve.
  The valve will be closed at end of refrigerant charging. However the valve will be opened on operation after refrigerant charging (check operation, nomal operation, etc.).
  If the tank is left with the valve open, the amount of refrigerant which is properly charged may be off the point.
- Make sure to perform the check operation after installation.
  Otherwise, the malfunction code "U3" will be displayed and normal operation cannot be performed.
  And the failure of "Check of miswiring" may also cause abnormal operation. Performance may drop due to the failure of "Judgment of piping length".
- Check operation must be performed for each refrigerant piping system.
  Checking is impossible if plural systems are being done at once.
- The individual problems of indoor units can not be checked.
  About these problems check by test run after the check operation is completed. (See chapter 13)
- The check operation cannot be performed in recovery or other service modes.

11-2-1 Procedure of Adding Refrigerant charging

1. Make sure the following works are complete in accordance with the installation manual.
   - Piping work
   - Wiring work
   - Air tight test
   - Vacuum drying
   - Installation work for Branch Selector, indoor unit
2. Calculate the “additional charging amount” using “How to calculate the additional refrigerant to be charged” in **“6-5 Example of connection”**. Be sure to note the additional charge amount on the refrigerant charge label.
3. Open the valve B (**See the figure 30**. The valve A,C and the liquid pipe, suction gas pipe, HP/LP gas pipe, equalizer pipe shutoff valves must be left closed), and charge the refrigerant of the “additional charging amount” from the liquid side shutout valve service port.

   (Refer to figure 30)
   1. Measuring device
   2. R410A tank (with siphon)
   3. Charge hose
   4. Equalizer pipe shutoff valve
   5. HP/LP gas pipe shutoff valve
   6. Suction gas shutoff valve
   7. Liquid pipe shutoff valve
   8. Refrigerant charge port
   9. Valve A
   10. Valve B
   11. Valve C
   12. Outside unit A
   13. Outside unit B
   14. To Branch Selector, indoor unit
   15. Field pipings
   16. Refrigerant flow
   17. Shutoff valve
   18. Service port
4. If the “additional charging amount” was charged fully, close the valve B and go to step 6.
   If the “additional charging amount” was not charged fully, close the valve B and go to step 5.
5. Perform the refrigerant charging following [Automatic refrigerant charging operation procedure] as shown below. And charge the remaining refrigerant of the “additional charging amount”.

NOTE

- For performing the automatic refrigerant charging operation, the push button on the PC-bord (A1) of outside unit are used. (See figure 29.)
  And the refrigerant are charged from the refrigerant charge port via the valve A. (See figure 31.) For operating the push button and opening or closeing the valves, follow the procedure.
- During Automatic refrigerant charging operation, the system will select charging mode (cooling mode or heating mode) by the temperature condition as follows.

  Outdoor temp. : 32˚F DB ~ 109˚F DB
  Indoor temp. : 50˚F DB ~ 90˚F DB → Cooling mode

  Less than above range → Heating mode

  When charging in cooling mode, the system will stop operation when the required amount of refrigerant is charged.
  During charging in heating mode, a person must manually close valve A and stop operation.
  Beforehand, check the remaining refrigerant that is needed to charge based on the “additional charging amount” in step 2 and the charged amount in step 3.
- The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°F DB (about 26 lb at outdoor temp. 32°F DB).
- During Automatic refrigerant charging operation, you can stop the operation forcedly by pushing MODE button (BS1).

(Refer to figure 31)
1. Measuring device
2. R410A tank (with siphon)
3. Charge hose
4. Equalizer pipe shutoff valve
5. HP/LP gas pipe shutoff valve
6. Suction pipe shutoff valve
7. Liquid pipe shutoff valve
8. Refrigerant charge port
9. Valve A
10. Valve B
11. Valve C
12. Outside unit A
13. Outside unit B
14. To Branch Selector, indoor unit
15. Field pipings
16. Refrigerant flow when charging
17. Shutoff valve
18. Service port
19. The refrigerant will be charged about 66 lb in one hour at outdoor temp. 86°FDB (26 lb at 32°FDB). (According to outdoor temp. or the refrigerant amount in the tank, the charging rate may speed up). If you need to speed up in case of multi system, connect the refrigerant tanks to each outside unit.

[Automatic refirgerant charging operation procedure]

NOTE

- The marks of LED mean as follows.
  ● : OFF ☼ : ON ◑ : Blinking ＊ : OFF, ON or Brinking

(1) Open the liquid pipe, suction gas pipe and HP/LP gas pipe shutoff valves. (The valve A~C must be closed. See figure 31.)
(2) • Close the electrical components box (1) lid and all front panel except on the electrical components box (1) side. (*1) And turn the power to the outdoor unit and all connected Branch Selector, indoor units. (*2)
  • After H2P stop blinking (about 12 minutes after turning on the power), check H2P is OFF.
  If H2P is ON, check the malfunction code in the remote controller of indoor unit and correct the malfunction in accordance with [Remote controller display malfunction code] in chapter 11-2-2.
(3) Check the LED. And push the MODE button (BS1) once if the LED displays is not as below.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	●	☼	●	●	●	●

(4) Push the TEST button (BS4) once. (The LED displays will change as below.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	☼	☼	☼	☼	☼	☼

(5) Hold the TEST button (BS4) down for 5 seconds or more.
(The LED displays will change as below and fan of outside unit will start rotation.)

H1P	H2P	H3P	H4P	H5P	H6P	H7P
●	◑	●	●	●	＊	＊

(6) When the compressor start working and the LED displays change any state in below (*3), go to “In case of cooling mode” or “In case of heating mode” in accordance with the LED displays.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	
◑	◑	◑	●	☼	●	☼	→ Go to “In case of cooling mode”
◑	◑	●	●	☼	●	☼	→ Go to “In case of heating mode”

In case of cooling mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels (*5).
After that, open the valve A immediately (See figure 31) (*6) and watch the remote controller display of indoor unit.
(8) If the remote controller display shows “PE” code (*7), ready to close the valve A.
And go to procedure (9).
If the remote controller display shows other code, close the valve A

immediately and refer to [Remote controller cooling mode malfunction code]

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(9) When the compressor stop working (the fan may continue rotation.), close the valve A immediately (*8).
And check the LED displays are as below and the remote controller display shows “P9” code.

H1P	H2P	H3P	H4P	H5P	H6P	H7P
☼	◑	◑	☼	☼	☼	☼

After checking, push the MODE button (BS1) once and the charging is complete.

In case of heating mode

(7) Push the TEST button (BS4) once within 5 minutes after procedure (5) (*4) and close the all front panels.
After that, open the valve A immediately (See figure 31) (*6) and check the charged amount by meauring device.
During operation, if the remote controller display shows “P2” or “P8” code, close the valve A immediately and refer to [Remote controller heating mode malfunction code].

⚠ Beware the fan running when open the front panel.
The fan may continue rotation after the system stop the operation.

(8) When the required amount of refrigerant is charged, close the valve A (See figure 31) (*8) and push the RETURN button (BS3) once. And then go to procedure (9).
(9) Push the MODE button (BS1) once, and the charging is complete.

Notes (*1)~(*9)

(*1) Lead the refrigerant charge hose etc from the pipe intake.
All front panels must be closed at the procedure (7).
(*2) • If you perform the refrigerant charging operation within the refrigerant system that have the power off unit, the operation cannot finish properly.
Check the number of outside and indoor units that is powered.
For checking, see [How to check how many units are connected] in chapter 11-1.
• To energize the crankcase heater, make sure to turn on for 6 hours before starting operation.
(*3) It takes about 2~10 minutes for getting stability of refrigerant state.
If the additional refrigerant is little and operation is started before getting stability, the system can not judge the charging amount precisely and it cause over charge.
(*4) If the TEST button (BS4) is not pushed within 5 minutes, “P2” code will displayed in the remote controller. In this case, refer [Remote controller cooling (or heating) mode malfunction code].
(*5) If the front panel is opened during the operation, the system cannot operate properly.
(*6) If you leave the system without connecting the refrigerant tank or opening the valve A for 30 minutes or more, the system stop operation and “P2” code are displayed in remote controller.
In this case, refer [Remote controller cooling (or heating) mode malfunction code].
(*7) Depending on the situation of operation such as the charging amount is little, the “PE” code may not be displayed and the “P9” code may be displayed.
(*8) Always close the valve A and take the tank off.
The refrigerant charge port of this unit have electric expansion valve and the valve are closed when charging is finished. However, the valve will opened when ather operation (Check operation, nomal operation, etc.). If you leave the tank connected, the refrigerant will charged and it cause over charge.

[Remote controller cooling mode malfunction code]

Code	The work contents	
PE	Charging is almost finished. Ready to close the valve A.	
PA PH	The refrigerant tank is empty. Close the valve A and replace empty tank to the new tank. After changing the tank, open the valve A again. ⚠ Beware the fan running. The outside unit does not stop operation.	
P8	Close the valve A immediately, and restart the operation from procedure (3).	
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.	After correcting the abnormality, restart the operation from procedure (3).
*	Operation is stoped abnormally. Close the valve A immediately. Confirm the malfunction code and correct the abnormality following the [Remote controller displays malfunction code] in chapter 11-2-2.	
P9	Charging is finished. Close the valve A and take the refrigerant tank off.	

[Remote controller heating mode malfunction code]

Code	The work contents
P8	Close the valve A immediately and push the TEST button (BS4) once. And restart from procedure (7) of “In case of heating mode”.
P2	Operation is interrupted. Close the valve A immedeately and check the below items. • Check if HP/LP gas pipe, suction gas pipe or liquid pipe shutoff valve is opened. • Check the refrigerant tank is connected and the valve A was opend. • Check if the air inlet and outlet of the indoor unit are not closed by an obstruction.

6. After completing the additional refrigerant charging, record the charging amount on the accessory “REQUEST FOR THE INDICATON” label (Installation records) and adhere it to the back side of the front panel.

11-2-2 Procedure of check operation

- Check operation perform the following work. Do the check operation following below.
Otherwise, malfunction code “U3” will be displayed in the remote controller and nomal operation can not be carried out.
  - ■ Check of shutoff valve opening
  - ■ Check of miswiring
  - ■ Judgment of piping length
  - ■ Check of refrigerant overcharge

⚠ NOTE

- Check operation can not carried out at outdoor temp. less than 23°F.
Perform the check operation at day or time that outdoor temp. is 23°F or more.

[Check Operation Procedure]

(1) Close the electrical components box lid and all front panels except as the side of the electrical components box and turn on the power to the outside unit and all connected Branch Selector, indoor units. (Be sure to turn the power on at least 6 hours before operation in order to have power running to the crank case heater.)

(2) Make the onsite settings as needed using the push button (BS1-BS5) on the outside unit PC-board (A1P) with the power on. (See **"12 Onsite Settings"**)

(3) Perform the check operation following the Check Operation Method of the [Service Precautions] label (lower) on the EL. COMPO. BOX lid. (See figure 32) The system operation for about 40~60 minutes and automatically stops the check operation.
If the malfunction code is not displayed in the remote controller after the system stop, check operation is completed. Normal operation will be possible after 5 minutes. If the malfunction code is displayed in the remote controller, correct the malfunction following [Remote controller displays malfunction code] and perform the check operation again.

(Refer to figure 32)

1. Electrical components box (1) lid
2. (Only REYQ~PAYD) Electrical components box (2) lid
3. [Service Precaution] label (upper)
4. [Service Precaution] label (lower)

NOTE

For interrupting the check operation, push RETURN button (BS3).

[Remote controller displays malfunction code]

Malfunction code	Installation error	Remedial action
E3, E4 F3, F6 UF	The shutoff valve of the outside unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outside unit is reversed.	Exchange two of the three phases (L1, L2, L3) to make a proper connection.
U1 U4 LC	No power is supplied to an outside, Branch Selector or indoor unit (including phase interruption).	Make sure the power source wire is properly connected to the outside , Branch Selector or indoor unit and revise if necessary.
UF	There is conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the transmission wiring are consistent with each other.
E3 F6 UF	Refrigerant overcharge.	Recalculate the additional amount refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	• Check if the additional refrigerant charge has been finished correctly. • Recalculate the additional amount refrigerant from the piping length and add the adequate amount.
U7, U4 UF, UH	Field wiring is connected to "TO MULTI UNIT (Q1,Q2)" terminal on the outside unit PC-board (A1P) when the system is one outdoor system.	Remove the line from the "TO MULTI UNIT (Q1, Q2)" terminal.

NOTE

If any malfunction codes other than the above are displayed, check the service manual for how to respond.

12. ONSITE SETTINGS

NOTE

In the case of a multi system, all onsite settings should be made on the master unit. Settings made on sub units are invalid.
The outside unit to which the indoor unit transmission wire are connected is the master unit, and all other units are sub units.

Use the push button switches (BS1 through BS5) on the outside unit PC-board (A1P) to make the necessary onsite settings.
See the "Service Precautions" label (upper) on the Electrical components box lid for details on the positions and operating method of the push button switches and on the onsite setting.
Make sure to record the setting on the accessory "REQUEST FOR THE INDICATION" label.

WARNING **Electric Shock Warning**

Use an insulated rod to operate the push buttons via the inspection door of Electrical components box lid.
There is a risk of electric shock if you touch any live parts, since this operation must be performed with the power on.

13. TEST RUN

13-1 Before test run

- Make sure the following works are completed in accordance with the installation manual.
  - Piping work
  - Wiring work
  - Air tight test
  - Vacuum drying
  - Additional refrigerant charge
  - Check operation
- Check that all work for the Branch Selector, indoor unit are finished and there are no danger to operate.

13-2 Test Run

After all works are completed, operate the unit normally and check the following.

(1) Make sure the indoor and outside units are operating normally.

(2) Operate each indoor unit one by one and make sure the corresponding outside unit is also operating.

(3) Check to see if cold (or hot) air is coming out from the indoor unit.

(4) Push the fan direction and strength buttons on the remote controller to see if they operate properly.

NOTE

- Heating is not possible if the outdoor temperature is 75°F or higher. Refer to the Operation manual.
- If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the crank case heater for a sufficient length of time before restarting the operation.
- Once stopping, the compressor will not restart in about 5 minutes even if the On/Off button of the remote controller is pushed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- The outside unit fan may rotate at low speeds if the Night-time low noise setting or the External low noise level setting is made, but this is not a malfunction.
- If the check operation was not performed at first istallation, the malfunction code "U3" will be displayed in the remote controller. Perform the check operation following **"11-2-2 Procedure of Check Operation"**.

13-3 Checks After Test Run

Perform the following checks after the test run is complete.

- Record the contents of field setting.
  → Record them on the accessory "REQUEST FOR THE INDICATION" label.
  And attach the label on the back side of the front panel.
- Record the installation date.
  → Record the installation date on the accessory "REQUEST FOR THE INDICATION" label in accordance with the IEC60335-2-40.
  And attach the label on the back side of the front panel.

NOTE

After the test run, when handing the unit over to the customer, make sure the electrical components box lid, the inspection door, and the unit casing are all attached.

CAUTION FOR REFRIGERANT LEAKS

(Points to note in connection with refrigerant leaks)

Introduction:

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

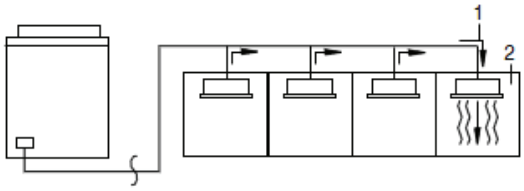
The VRV System, like other air conditioning systems, uses R-410A as refrigerant. R-410A is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room that is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb/ft^3 (the weight in lb of the refrigerant gas in 1 ft^3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



1. direction of the refrigerant flow
2. room where refrigerant leak has occurred (outflow of all the refrigerant from the system)

Pay special attention to the place, such as a basement, etc., where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1–2 below and take whatever action is necessary to comply.

1. Calculate the amount of refrigerant (lb) charged to each system separately.

amount of refrigerant in a single unit system (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb) in the system

NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Follow local code requirements (ASHRAE-15 2007 & ASHRAE-34 2007).

6. External Static Pressure Setting

6.1 460V

How to set the unit to high ESP.

(1) Standard external static pressure for VRV is 0.12" wg.

(2) High external static pressure of 0.32" wg is available by field setting as shown below.
In this case a kind of sound proof device should be considered because of increasing the operation sound.
Set the unit along the operation name plate attached to the face of the switch box.

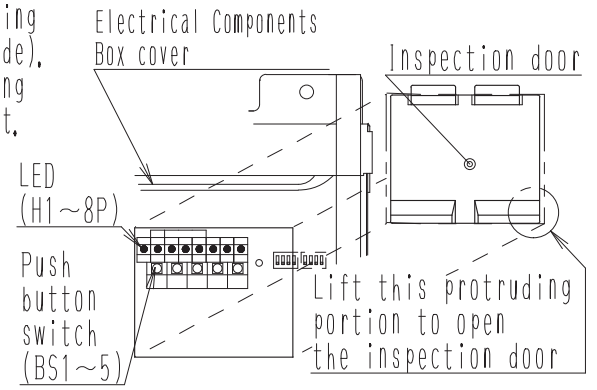
Service Precautions

Touch the uncoated metal part to eliminate static electricity before performing service.
(Ex. standard type·····the Electrical Components Box cover)

Field setting

Carry out the field setting according to the following instructions.

- For single outdoor system, carry out all field setting through the Electrical Components Box (1) (right side).
- For multi outdoor system, carry out all field setting through the Electrical Components Box of master unit. (Refer Caution for Multi outdoor system.)


Electrical Components Box cover
Inspection door
LED (H1~8P)
Push button switch (BS1~5)
Lift this protruding portion to open the inspection door
Electrical Components Box(the upper right)

1. How to operate
- Open the inspection door as shown to the right, with the power on.
Operate the push button switch with a resin ballpoint pen or other non-conducting object.
- After the work is finished, make sure to shut the inspection door.

2. Setting by the push button switch (BS1-5)
- Function of the push button switch (on the PC board of the outdoor unit (A1P))

	TEST:◑	C/H SELECTOR					
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	☼	●	●	●	●	●
MODE	HWL:☼	IND	MASTER	SLAVE	L, N, O, P	DEMAND	MULTI
	○	○	○	○	○	○	
	MODE:BS1	SET:BS2	RETURN:BS3	TEST:BS4	RESET:BS5		

LED display: ●···Light OFF ☼···Light ON ◑···Flashing

- The LED display on the left shows the factory setting of the single outdoor system.
- If you get confused in the setting process, push the MODE button (BS1). Then it will return to initial state(SETTING MODE 1).

For resetting the address when the wiring is changed or an additional indoor unit is installed
For check operation
For changing the field setting
For changing the setting mode

- Changing the setting mode

The setting mode can be changed by the MODE button (BS1) according to the following procedure.
When H1P is flashing(◑), push BS1 once. It will change to SETTING MODE 1.

● SETTING MODE 2 (H1P is light ON) Setting of the following items Ⓐ to Ⓗ can be carried out.
(See the service manual for setting other than the below.)

Setting procedure	Details of setting • set point	LED display and its points ⊘ H1P H2P H3P H4P H5P H6P H7P
① Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode(Ⓐ ~ Ⓗ).	Ⓐ Additional refrigerant charging operation setting	☼ ● ☼ ● ☼ ● ●
	Ⓑ Refrigerant recovery operation/Evacuation mode setting	☼ ● ☼ ● ☼ ● ☼
	Ⓒ Night-time low noise setting	☼ ● ☼ ● ☼ ☼ ●
	Ⓓ External low noise level setting(※1)	☼ ● ☼ ☼ ● ● ☼
	Ⓔ Demand level setting(※1)	☼ ● ☼ ☼ ☼ ☼ ●
	Ⓕ External low noise demand setting(※1)	☼ ● ● ☼ ☼ ● ●
	Ⓖ High static pressure setting	☼ ● ☼ ● ● ☼ ●
	Ⓗ Evaporating Temperature Setting	☼ ● ● ☼ ● ● ●
② Push the RETURN button (BS3). (The present setting will be indicated.)		Either of ③
③ Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode.	For Ⓐ, Ⓑ, Ⓕ, Ⓖ. ON	☼ ● ● ● ● ◑ ●
	For Ⓐ, Ⓑ, Ⓕ, Ⓖ. OFF(Factory set)	☼ ● ● ● ● ● ◑
	For Ⓒ. (※2) OFF(Factory set)	☼ ● ● ● ● ● ●
	For Ⓒ. (※2) Level 1	☼ ● ● ● ● ● ◑
	For Ⓒ. (※2) Level 2	☼ ● ● ● ● ◑ ●
	For Ⓒ. (※2) Level 3	☼ ● ● ● ● ◑ ◑
	For Ⓓ, Ⓔ. (※2) Level 1	☼ ● ● ● ◑ ● ◑
	For Ⓓ, Ⓔ. (※2) Level 2(Factory set)	☼ ● ● ● ◑ ◑ ●
	For Ⓓ, Ⓔ. (※2) Level 3	☼ ● ● ● ◑ ● ●
	For Ⓗ. (※2) Level L	☼ ● ◑ ● ● ● ◑
	For Ⓗ. (※2) Level M(Factory set)	☼ ● ● ● ● ◑ ●
	For Ⓗ. (※2) Level H	☼ ● ● ● ◑ ● ◑
④ Push the RETURN button (BS3) (The setting in ③ is defined.)		Flashing →Light ON
⑤ Push the RETURN button (BS3) again. (The system start the operation according to the setting.)		☼ ● ● ● ● ● ●

(※2) Effect of level setting

	set point		
	level 1	level 2	level 3
	level L	level M	level H
Ⓒ・Ⓓ noise level	⟶ low noise		
Ⓔ power consumption	saving power ⟵		
Ⓗ evap. temp.	⟶ Low		

For details, see the service manual.

〈 CAUTION 〉
※1 For selecting low noise operation by an outside order, demand operation, and external control adapter for outdoor unit (optional accessory) is required. For details, see the instruction attached to the adapter.

● Confirmation of setting
The following items can be confirmed by the SETTING MODE 1

Confirming items	Details for LED display	LED display and its points ⊘ H1P H2P H3P H4P H5P H6P H7P
The present operating state	●:Normal ☼:Malfunction ◑:Under preparation or under check operation	● ● ☼ ● ● ● ●
Low noise level setting state	●:Under normal operation (Factory setting) ☼:Under low noise operation	● ● ☼ ● ● ● ●
Demand setting state	●:Under normal operation (Factory setting) ☼:Under low noise operation	● ● ☼ ● ● ● ●

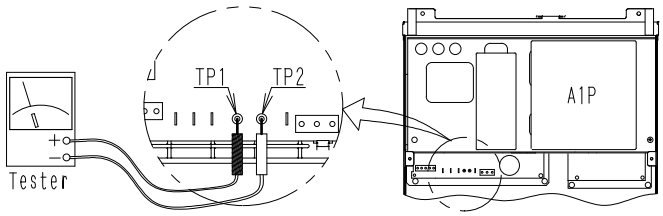
Caution for the inspection door

Shut the inspection door after servicing or mulfunction may occur due to water or foreign materials entering.
(Otherwise, it may cause malfunction by such as intrusion of water or foreign materials.)

Caution when performing service inside the Electrical Components Box

⚠WARNING ⚠Caution to ELECTRIC SHOCK

1. Do not open the Electrical Components Box cover for 10 minutes after the power supply is turned off.
2. Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off.
   In addition, measure the points shown below with a tester and confirm that the voltage of the capacitor in the main circuit is less than DC50V.
3. To prevent a damage of the PC board, touch the unncoated metal part and make sure to eliminate static electricity before pulling out or plugging in the connector.
4. The Work must be started after pulling out the junction connecter X1A, X2A, X3A, X4A (X3A and X4A are fixed on only the unit installed 2 fan motors.) For the fan motor in the outdoor unit and be careful not to touch the live parts.
   (If the fan rotates by strong wind, it may cause storage of electricity in the capacitor in the main circuit and electric shock.)
5. After the service is finished, plug in the junction connecter.
   (Otherwise, Error code [E7] will be displayed in the remote controller, and normal operation will not be performed.
   (For details, see the "Wiring Diagram" labeled on the back of the Electrical Components Box lid.)



Caution for multiple outdoor units

All the settings must be made by the master unit. Setting by the slave unit is not effective.

【How to identify master or slave】

- The master unit is the outdoor unit connected to the transmission wiring to the indoor units, and the others are the slave units.
- The system status can be checked on LED display on the PC board (A1P) of the unit, as shown in the table to the right.

	LED display and its points H1P H2P H3P H4P H5P H6P H7P H8P
Master	● ● ☼ ● ● ● ● ☼
Slave 1	● ● ● ● ● ● ● ☼
Slave 2	● ● ● ● ● ● ● ●

Caution for piping work and additional refrigerant charge

This unit uses R410A as a refrigerant, so keep the following points.

- Use the charging hose and gauge manifold designed exclusive use R410A in order to withstand the pressure and prevent impurities(such as SUNISO oil) from mixing into.
- Carry out a nitrogen blow when brazing.
- Perform the air tightness and the vacuum drying certainly. (The air tightness test pressure:550 PSI)
- Charge the additional refrigerat in liquid state.

2P217697F

Service mode operation method

[Note] • After turning on the power supply, the unit can not start until the LED H2P goes off (for maximum 12 minutes).
• Do not shut off the power and do not reset the SETTING MODE 2 when evacuating or recovering the refrigerant.
(The expantion valves will close and the system can not be evacuated or recovered the refrigerant.)

[Evacuation method] (At the first installation this evacuation is not required. It is only required for service.)

① When the unit is at standstill and under the SETTING MODE 2, set the Ⓑ Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the BS and outdoor units will be opened completely, H1P will light up, and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
② Evacuate the system with a vaccum pump.
③ After completed, push the MODE button (BS1) and reset the SETTING MODE 2.

[Refrigerant recovery operation method] (Make sure to use a refrigerant reclaimer).

① When the unit is at standstill and under the SETTING MODE 2, set the Ⓑ Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor, the BS and outdoor units will be opened completely, H1P will light up and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
② Recover the refrigerant by a refrigerant reclaimer.
③ After completed, push the MODE button (BS1) and reset the SETTING MODE 2.

Additional refrigerant charging method

[Note] When the outdoor unit is stopped and the entire quantity of refrigerant can not be charged from the stop valve on the liquid side, make sure to charge the remaining quantity of refrigerant using this procedure. If the refrigerant quantity is insufficient, the unit may malfunction.

[Operation procedure]

① Turn ON the power of the indoor unit, the Branch Selector, and the outdoor unit.
② Make sure to completely open the equalizer(Multi system only), suction pipe, HP/LP gas pipe, and liquid pipe shutoff valves.
③ Connect the refrigerant charge hose to the refrigerant charging port (for additionally charging the refrigerant).
④ In the stopped status, set to the Ⓐ additional refrigerant charging operation setting in SETTING MODE 2 (H1P : Turn on).
⑤ The operation is automatically started.
(The LED indicator H2P flickers, and [Test operation] and [Under centralized control] are displayed in the remote controller.)
⑥ After charging the specified quantity of refrigerant, press the RETURN button (BS3) to stop the operation.
The operation is automatically stopped within 30 minutes.
If charging is not completed within 30 minutes, set and perform the Ⓐ additional refrigerant charging operation again.
If the additional refrigerant charging operation is stopped soon, the refrigerant may be overcharged.
Never charge extra refrigerant.
⑦ Disconnect the refrigerant charge hose.

2P217697F

Check operation method

[Note] Make sure to completely open the equalizer(Multi system only), suction pipe, dual pressure gas pipe, and liquid pipe shutoff valves.

- In the check operation, the following works will be automatically performed.

Check of miswiring/Check of shutoff valve opening/Check of refrigerant overcharge/Judgment of piping length

- Make sure to carry out the check operation after the first installation.
  Otherwise, the malfunction code "U3" will be displayed in the remote controller and normal operation cannot be carried out.
  When the check operation is finished normally, normal operation can be carried out after 5 minutes.
- For Multi system, check the setting and result on the master unit. (See Caution for Multi connecting system)
- The abnormality of each indoor unit can not be checked. After the check operation is finished, check the indoor units individually by normal operation using the remote controller.

[Operation procedure]

① To protect the compressor, make sure to turn on the power supply for 6 hours before starting operation.
(After turning on the power supply, the unit can not start the operation until the H2P LED goes off. (maximum 12 minutes))
② Set to the SETTING MODE 1 (H1P: light OFF)
③ Push the TEST button(BS4) for 5 seconds or more. Then the unit will start the check operation.
- The check operation is automatically carried out in a cooling mode. H2P will flash up and [Test operation] and [Under centralized control] will be displayed in the remote controller.
- It may take 10 minutes to bring the state of refrigerant uniform before the compressor starts.
- During the check operation, the refrigerant running sound or the magnetic sound of a solenoid valve may become loud during operation. And the LED display may change, but these are not malfunctions.
- During the check operation, it is impossible to stop the unit from the remote controller. When discontinue the operation, push the RETURN button (BS3). The system will stop after behind operation for 30 seconds.

④ Close the front panel. (Otherwise, it may cause a misjudgment.)
⑤ When the checks are completed , the system will stop automatically. After the system stopes the operation , check the operation results by the outdoor unit LED display. (See the table shown right.)

STATE	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal	●	●	☼	●	●	●	●
Abnormal	●	☼	☼	●	●	●	●

[Measure for abnormal finish]

① Confirm the malfunction code by the remote controller, and correct the abnormality. (For how to correct the abnormality, see the installation manual.)
② After correcting the abnormality, push the RETURN button (BS3) and reset the malfunction code.
③ Carry out the check operation again and confirm that the abnormality is properly corrected.

Automatic refrigerant charge method

- For details, refer the "INSTALLATION MANUAL"

ELECTRIC SHOCK HAZARD!

DISCONNECT ALL REMOTE POWER SUPPLIES BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

Failure to do so could lead to serious injury or death. Only a qualified service technician should install or service this equipment.

DANGER D' ELECTROCUTION!

DÉCONNECTER TOUTES LES ALIMENTATIONS ÉLECTRIQUES ÉLOIGNÉES AVANT D' INSTALLER OU DE REPARER CET APPAREIL.

Le non respect de cette recommandation peut entraîner des blessures graves ou la mort.
Seul un technicien de service qualifié peut installer ou réparer cet appareil.

2P217697F

6.2 208-230V

How to set the unit to high ESP.

(1) Standard external static pressure for VRV is 0.12”wg.

(2) High external static pressure of 0.32”wg is available by field setting as shown below.
In this case a kind of sound proof device should be considered because of increasing the operation sound.
Set the unit along the operation name plate attached to the face of the switch box.

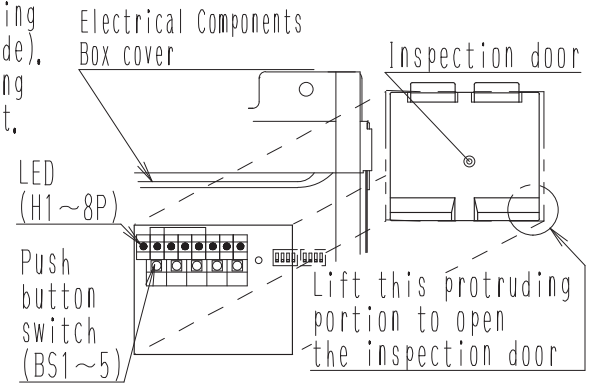
Service Precautions

Touch the uncoated metal part to eliminate static electricity before performing service.
(Ex. standard type……the Electrical Components Box cover)

Field setting

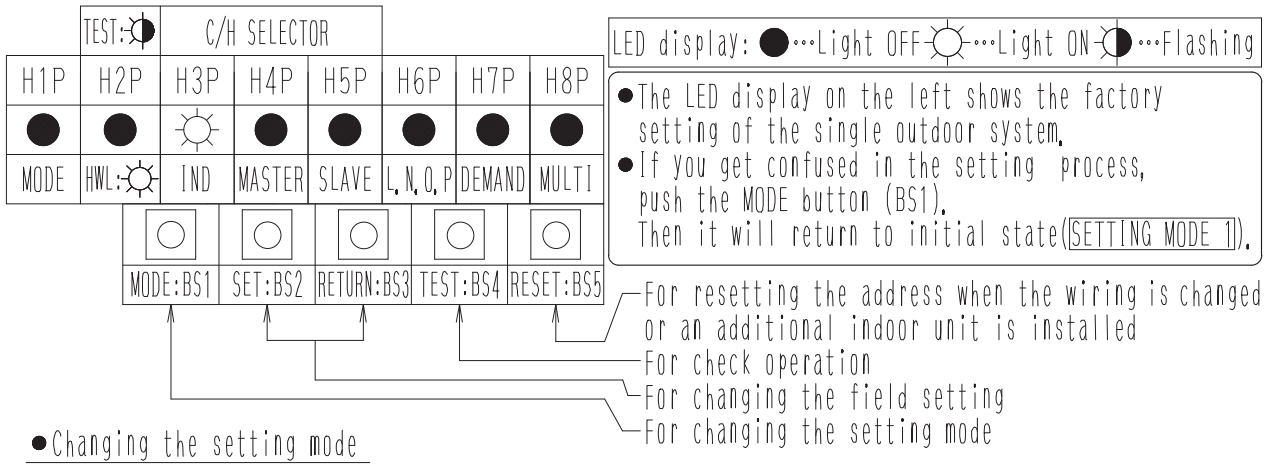
Carry out the field setting according to the following instructions.

- For single outdoor system, carry out all field setting through the Electrical Components Box (1) (right side).
- For multi outdoor system, carry out all field setting through the Electrical Components Box of master unit. (Refer Caution for Multi outdoor system.)


Electrical Components Box cover
Inspection door
LED (H1~8P)
Push button switch (BS1~5)
Lift this protruding portion to open the inspection door
Electrical Components Box(the upper right)

1. How to operate
- Open the inspection door as shown to the right, with the power on.
Operate the push button switch with a resin ballpoint pen or other non-conducting object.
- After the work is finished, make sure to shut the inspection door.

2. Setting by the push button switch (BS1-5)
- Function of the push button switch (on the PC board of the outdoor unit (A1P))


TEST:
C/H SELECTOR
H1P H2P H3P H4P H5P H6P H7P H8P
MODE HWL: IND MASTER SLAVE L.N.O.P DEMAND MULTI
MODE:BS1 SET:BS2 RETURN:BS3 TEST:BS4 RESET:BS5
LED display: ●…Light OFF ☼…Light ON ◑…Flashing
●The LED display on the left shows the factory setting of the single outdoor system.
●If you get confused in the setting process, push the MODE button (BS1). Then it will return to initial state(SETTING MODE 1).
For resetting the address when the wiring is changed or an additional indoor unit is installed
For check operation
For changing the field setting
For changing the setting mode

- Changing the setting mode

The setting mode can be changed by the MODE button (BS1) according to the following procedure.
When H1P is flashing(◑), push BS1 once. It will change to SETTING MODE 1.

● SETTING MODE 2 (H1P is light ON) Setting of the following items Ⓐ to Ⓗ can be carried out.
(See the service manual for setting other than the below.)

Setting procedure	Details of setting • set point		LED display and its points ☒ H1P H2P H3P H4P H5P H6P H7P
①Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode(Ⓐ ~ Ⓗ).	Ⓐ Additional refrigerant charging operation setting		☼ ● ☼ ● ☼ ● ●
	Ⓑ Refrigerant recovery operation/Evacuation mode setting		☼ ● ☼ ● ☼ ● ☼
	Ⓒ Night-time low noise setting		☼ ● ☼ ● ☼ ☼ ●
	Ⓓ External low noise level setting(※1)		☼ ● ☼ ☼ ● ● ☼
	Ⓔ Demand level setting(※1)		☼ ● ☼ ☼ ☼ ☼ ●
	Ⓕ External low noise demand setting(※1)		☼ ● ● ☼ ☼ ● ●
	Ⓖ High static pressure setting		☼ ● ☼ ● ● ☼ ●
	Ⓗ Evaporating Temperature Setting		☼ ● ● ☼ ● ● ●
② Push the RETURN button (BS3). (The present setting will be indicated.)			Either of ③
③Push the SET button (BS2) and adjust the LED display to the example shown on the right according to the required mode.	For Ⓐ, Ⓑ, Ⓕ, Ⓖ.	ON	☼ ● ● ● ● ◑ ●
		OFF(Factory set)	☼ ● ● ● ● ● ◑
	For Ⓒ. (※2)	OFF(Factory set)	☼ ● ● ● ● ● ●
		Level 1	☼ ● ● ● ● ● ◑
		Level 2	☼ ● ● ● ● ◑ ●
		Level 3	☼ ● ● ● ● ◑ ◑
	For Ⓓ, Ⓔ. (※2)	Level 1	☼ ● ● ● ◑ ● ◑
		Level 2(Factory set)	☼ ● ● ● ◑ ◑ ●
		Level 3	☼ ● ● ● ◑ ● ●
	For Ⓗ. (※2)	Level L	☼ ● ◑ ● ● ● ◑
		Level M(Factory set)	☼ ● ◑ ● ● ◑ ●
		Level H	☼ ● ◑ ● ◑ ● ◑
④ Push the RETURN button (BS3) (The setting in ③ is defined.)			Flashing →Light ON
⑤ Push the RETURN button (BS3) again. (The system start the operation according to the setting.)			☼ ● ● ● ● ● ●

(※2) Effect of level setting

	set point		
	level 1	level 2	level 3
	level L	level M	level H
Ⓒ•Ⓓ noise level	→ low noise		
Ⓔ power consumption	saving power←		
Ⓗ evap. temp.	→ Low		

For details, see the service manual.

〈 CAUTION 〉

※1 For selecting low noise operation by an outside order, demand operation, and external control adapter for outdoor unit (optional accessory) is required. For details, see the instruction attached to the adapter.

● Confirmation of setting

The following items can be confirmed by the SETTING MODE 1

Confirming items	Details for LED display	LED display and its points ☒ H1P H2P H3P H4P H5P H6P H7P
The present operating state	●:Normal ☼:Malfunction ◑:Under preparation or under check operation	● ☒ ☼ ● ● ● ●
Low noise level setting state	●:Under normal operation (Factory setting) ☼:Under low noise operation	● ● ☼ ● ● ☒ ●
Demand setting state	●:Under normal operation (Factory setting) ☼:Under low noise operation	● ● ☼ ● ● ● ☒

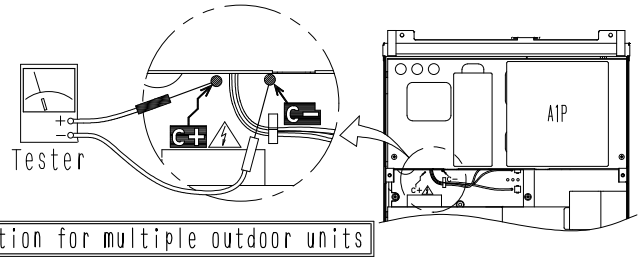
Caution for the inspection door

Shut the inspection door after servicing or mulfunction may occur due to water or foreign materials entering.
(Otherwise, it may cause malfunction by such as intrusion of water or foreign materials.)

Caution when performing service inside the Electrical Components Box

⚠WARNING ⚠Caution to ELECTRIC SHOCK

1. Do not open the Electrical Components Box cover for 10 minutes after the power supply is turned off.
2. Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off.
   In addition, measure the points shown below with a tester and confirm that the voltage of the capacitor in the main circuit is less than DC50V.
3. To prevent a damage of the PC board, touch the uncoated metal part and make sure to eliminate static electricity before pulling out or plugging in the connector.
4. The Work must be started after pulling out the junction connecter X1A, X2A , X3A, X4A (X3A and X4A are fixed on only the unit installed 2 fan motors. X3A and X4A of RXYQ144PTJU, REYQ144PTJU are inside the Electrical Components Box(2). See the wiring diagram 3D060077.) for the fan motor in the outdoor unit and be careful not to touch the live parts.
   (If the fan rotates by strong wind, it may cause storage of electricity in the capacitor in the main circuit and electric shock.)
5. After the service is finished, plug in the junction connecter.
   (Otherwise, Error code「E7」will be displayed in the remote controller, and normal operation will not be performed.
   (For details, see the "Wiring Diagram" labeled on the back of the Electrical Components Box lid.)



Caution for multiple outdoor units

All the settings must be made by the master unit. Setting by the slave unit is not effective.

【How to identify master or slave】

- The master unit is the outdoor unit connected to the transmission wiring to the indoor units, and the others are the slave units.
- The system status can be checked on LED display on the PC board (A1P) of the unit, as shown in the table to the right.

	LED display and its points H1P H2P H3P H4P H5P H6P H7P H8P
Master	● ● ☼ ● ● ● ● ☼
Slave 1	● ● ● ● ● ● ● ☼
Slave 2	● ● ● ● ● ● ● ●

Caution for piping work and additional refrigerant charge

This unit uses R410A as a refrigerant, so keep the following points.

- Use the charging hose and gauge manifold designed exclusive use R410A in order to withstand the pressure and prevent impurities(such as SUNISO oil) from mixing into.
- Carry out a nitrogen blow when brazing.
- Perform the air tightness and the vacuum drying certainly. (The air tightness test pressure:550 PSI)
- Charge the additional refrigerat in liquid state.

2P217698D

Service mode operation method

[Note] • After turning on the power supply, the unit can not start until the LED H2P goes off (for maximum 12 minutes).
• Do not shut off the power and do not reset the SETTING MODE 2 when evacuating or recovering the refrigerant.
(The expantion valves will close and the system can not be evacuated or recovered the refrigerant.)

[Evacuation method] (At the first installation this evacuation is not required. It is only required for service.)

① When the unit is at standstill and under the SETTING MODE 2, set the Ⓑ Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor , the BS and outdoor units will be opened completely. H1P will light up, and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
② Evacuate the system with a vaccum pump.
③ After completed, push the MODE button (BS1) and reset the SETTING MODE 2.

[Refrigerant recovery operation method] (Make sure to use a refrigerant reclaimer).

① When the unit is at standstill and under the SETTING MODE 2, set the Ⓑ Refrigerant recovery /Evacuation mode to ON. The expansion valves in the indoor , the BS and outdoor units will be opened completely. H1P will light up and "Test operation" and "Under centralized control" will be displayed on the remote controller. The operation will be rejected.
② Recover the refrigerant by a refrigerant reclaimer.
③ After completed, push the MODE button (BS1) and reset the SETTING MODE 2.

Additional refrigerant charging method

[Note] When the outdoor unit is stopped and the entire quantity of refrigerant can not be charged from the stop valve on the liquid side , make sure to charge the remaining quantity of refrigerant using this procedure.
If the refrigerant quantity is insufficient , the unit may malfunction.

[Operation procedure]

① Turn ON the power of the indoor unit , the BS and the outdoor unit.
② Make sure to completely open the equalizer(Multi system only), suction pipe, HP/LP gas pipe, and liquid pipe shutoff valves.
③ Connect the refrigerant charge hose to the refrigerant charging port (for additionally charging the refrigerant).
④ In the stopped status , set to the Ⓐ additional refrigerant charging operation setting in SETTING MODE 2 (H1P : Turn on).
⑤ The operation is automatically started.
(The LED indicator H2P flickers , and [Test operation] and [Under centralized control] are displayed in the remote controller.)
⑥ After charging the specified quantity of refrigerant , press the RETURN button (BS3) to stop the operation.
The operation is automatically stopped within 30 minutes.
If charging is not completed within 30 minutes , set and perform the Ⓐ additional refrigerant charging operation again.
If the additional refrigerant charging operation is stopped soon , the refrigerant may be overcharged.
Never charge extra refrigerant.
⑦ Disconnect the refrigerant charge hose.

2P217698D

Check operation method

[Note] Make sure to completely open the equalizer(Multi system only), suction pipe, dual pressure gas pipe, and liquid pipe shutoff valves.

- In the check operation, the following works will be automatically performed.

Check of miswiring/Check of shutoff valve opening/Check of refrigerant overcharge/Judgment of piping length

- Make sure to carry out the check operation after the first installation.
  Otherwise, the malfunction code "U3" will be displayed in the remote controller and normal operation cannot be carried out.
  When the check operation is finished normally, normal operation can be carried out after 5 minutes.
- For Multi system, check the setting and result on the master unit. (See Caution for Multi connecting system)
- The abnormality of each indoor unit can not be checked. After the check operation is finished, check the indoor units individually by normal operation using the remote controller.

[Operation procedure]

① To protect the compressor, make sure to turn on the power supply for 6 hours before starting operation.
(After turning on the power supply, the unit can not start the operation until the H2P LED goes off. (maximum 12 minutes))
② Set to the SETTING MODE 1 (H1P: light OFF)
③ Push the TEST button(BS4) for 5 seconds or more. Then the unit will start the check operation.
- The check operation is automatically carried out in a cooling mode, H2P will flash up and [Test operation] and [Under centralized control] will be displayed in the remote controller.
- It may take 10 minutes to bring the state of refrigerant uniform before the compressor starts.
- During the check operation, the refrigerant running sound or the magnetic sound of a solenoid valve may become loud during operation. And the LED display may change, but these are not malfunctions.
- During the check operation, it is impossible to stop the unit from the remote controller. When discontinue the operation, push the RETURN button (BS3). The system will stop after behind operation for 30 seconds.

④ Close the front panel. (Otherwise, it may cause a misjudgment.)
⑤ When the checks are completed , the system will stop automatically. After the system stopes the operation , check the operation results by the outdoor unit LED display. (See the table shown right.)

STATE	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal	●	●	☼	●	●	●	●
Abnormal	●	☼	☼	●	●	●	●

[Measure for abnormal finish]

① Confirm the malfunction code by the remote controller, and correct the abnormality. (For how to correct the abnormality, see the installation manual.)
② After correcting the abnormality, push the RETURN button (BS3) and reset the malfunction code.
③ Carry out the check operation again and confirm that the abnormality is properly corrected.

Automatic refrigerant charge method

- For details, refer the "INSTALLATION MANUAL"

DANGER

ELECTRIC SHOCK HAZARD!

DISCONNECT ALL REMOTE POWER SUPPLIES BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

Failure to do so could lead to serious injury or death. Only a qualified service technician should install or service this equipment.

DANGER D'ELECTROCUTION!

DÉCONNECTER TOUTES LES ALIMENTATIONS ÉLECTRIQUES ÉLOIGNÉES AVANT D'INSTALLER OU DE REPARER CET APPAREIL.

Le non respect de cette recommandation peut entraîner des blessures graves ou la mort.
Seul un technicien de service qualifié peut installer ou réparer cet appareil.

2P217698D

Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor and/or retailer.

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Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, COMMERCIAL HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, MARINE TYPE CONTAINER REFRIGERATION UNITS, COMPRESSORS AND VALVES.

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM

EC99J2044

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 international standard for environment management.

Dealer

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